MRCP
PART 1

SAMPLE QUESTIONS

Question 1

A 65-year-old woman presented with a 12-hour history of sudden-onset gait unsteadiness, vomiting and headache, followed by increasing drowsiness.

What is the most likely diagnosis?

- A: acute cerebellar haemorrhage ○
- B: acute subdural haemorrhage ○
- C: frontal subdural empyema ○
- D: herpes simplex encephalitis ○
- E: pituitary apoplexy ○

Question 1
Next Question

Question 1

No Answer Given

Incorrect

A 65-year-old woman presented with a 12-hour history of sudden-onset gait unsteadiness, vomiting and headache, followed by increasing drowsiness.

What is the most likely diagnosis?

Answers

A: acute cerebellar haemorrhage
B: acute subdural haemorrhage
C: frontal subdural empyema
D: herpes simplex encephalitis
E: pituitary apoplexy

Correct answer: A

Explanation

The sudden onset suggests a vascular cause and the rapid worsening with drowsiness suggests an expanding space-occupying lesion with rising intracranial pressure and risk of herniation. The description is classic for a cerebellar haemorrhage which, by its location in the posterior fossa, causes this clinical scenario. It is a neurological emergency, requiring rapid identification.

Question 2

A post-marketing observational study of a new drug was conducted on 5000 patients following clinical trials.

What best describes the data generated from this type of study?

A: comparative efficacy ○

B: cost–benefit ○

C: cost effectiveness ○

D: potency ○

E: profile of adverse effects ○

Question 2
Next Question

Question 2

No Answer Given

Incorrect

A post-marketing observational study of a new drug was conducted on 5000 patients following clinical trials.

What best describes the data generated from this type of study?

Answers

A: comparative efficacy
B: cost–benefit
C: cost effectiveness
D: potency
E: profile of adverse effects

Correct answer: E

Explanation

Post-authorisation safety studies (PASS) are observational (non-randomised) studies conducted after a new drug is introduced into clinical use. Their aim is to characterise the adverse-effect profile, particularly in patients not studied during clinical trials, such as those with liver and renal disease, pregnant women, and children.

Question 3

A 79-year-old woman was admitted for elective hip-replacement surgery.

On examination, she was pale. There was 2-cm splenomegaly and there were small discrete axillary lymph nodes.

Investigations:

haemoglobin	107 g/L (115–165)
white cell count	34.5 × 10^9/L (4.0–11.0)
platelet count	183 × 10^9/L (150–400)

What is the most likely diagnosis?

A: acute myeloid leukaemia ○

B: chronic lymphocytic leukaemia ○

C: chronic myeloid leukaemia ○

D: myelodysplasia ○

E: myelofibrosis ○

Question 3

No Answer Given

Incorrect

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platelet count	183 × 10^9/L (150–400)

What is the most likely diagnosis?

Answers

A: acute myeloid leukaemia
B: chronic lymphocytic leukaemia
C: chronic myeloid leukaemia
D: myelodysplasia
E: myelofibrosis

Correct answer: B

Explanation

The presence of splenomegaly, anaemia and lymph nodes would make chronic lymphocytic leukaemia the most likely possibility. Acute myeloid leukaemia is unlikely to be diagnosed as an incidental finding and would more likely be associated with thrombocytopenia. Chronic myeloid leukaemia is a possibility, although this is a less common diagnosis and an elevated platelet count would be expected. Myelodysplasia would not usually be associated with a high white count. Myelofibrosis is a possible diagnosis, although the high white count with normal platelet count makes this less likely. It would be expected to request a white cell differential in the clinical setting.

Question 4

A 17-year-old boy presented with a non-blanching rash over his legs, a swollen knee and painless, visible haematuria.

Urinalysis showed blood 3+, protein 1+.

Investigations:

serum creatinine	210 μmol/L (60–110)
urine culture	negative
ultrasound scan of kidneys	normal

What glomerular abnormality is most likely to be present at renal biopsy?

A: focal segmental sclerosis ○

B: foot process effacement ○

C: linear deposition of IgG on the basement membrane ○

D: mesangial deposition of IgA ○

E: thickening of basement membranes ○

Question 4 ⌄

Next Question

Question 4

No Answer Given

Incorrect

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What glomerular abnormality is most likely to be present at renal biopsy?

Answers

A: focal segmental sclerosis
B: foot process effacement
C: linear deposition of IgG on the basement membrane
D: mesangial deposition of IgA
E: thickening of basement membranes

Correct answer: D

Explanation

Typical presentation of IgA vasculitis (also known as Henoch–Schönlein purpura; this eponym is no longer used in the exam) with a rash, arthritis and acute glomerulonephritis. The IgA is seen on immunofluorescence or immunohistochemistry. Foot process effacement is seen in nephrotic syndrome of various types. Linear deposition of IgG on basement membrane in anti-glomerular basement membrane disease, thickened basement membranes are typically seen in Alport, focal and segmental sclerosis seen in focal segmental glomerulosclerosis (FSGS). FSGS describes a lesion seen on biopsy (focal means that some glomeruli are affected and others are not and segmental means that part of the glomerulus is affected and other parts are left unaffected).

Question 5

A 24-year-old woman attended the genitourinary medicine clinic for a sexual health screen. She was asymptomatic and had been previously well.

Investigations:

anti-hepatitis B core IgG antibody	positive
anti-hepatitis B core IgM antibody	negative
anti-hepatitis B surface antibody	positive
hepatitis B surface antigen	negative

What is the most likely diagnosis?

A: acute hepatitis B ○

B: chronic hepatitis B ○

C: false-positive hepatitis B serology ○

D: previous infection with hepatitis B ○

E: previous vaccination for hepatitis B ○

Question 5

Next Question

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No Answer Given

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A 24-year-old woman attended the genitourinary medicine clinic for a sexual health screen. She was asymptomatic and had been previously well.

Investigations:

anti-hepatitis B core IgG antibody	positive
anti-hepatitis B core IgM antibody	negative
anti-hepatitis B surface antibody	positive
hepatitis B surface antigen	negative

What is the most likely diagnosis?

Answers

A: acute hepatitis B
B: chronic hepatitis B
C: false-positive hepatitis B serology
D: previous infection with hepatitis B
E: previous vaccination for hepatitis B

Correct answer: D

Explanation

This a question addressing serological testing for hepatitis B infection. It is important to distinguish between surface and core antibodies, and between antibody and antigen. Read the question carefully!

A acute hepatitis B would be indicated by positive anti-hepatitis B core IgM antibody

B chronic hepatitis B would be indicated by positive hepatitis B surface antigen

C false-positive hepatitis B serology would be indicated by positive anti-hepatitis B core IgG antibody alone

D previous infection with hepatitis B is correct as indicated by positive anti-hepatitis B surface antibody and anti-hepatitis B core IgG antibody with negative hepatitis B surface antigen

E previous vaccination for hepatitis B would be indicated by positive anti-hepatitis B surface antibody but negative anti-hepatitis B core IgG antibody

Question 6

A 45-year-old woman presented with right flank pain. She had a 4-year history of hypertension and progressive cognitive impairment.

On examination, she had livedo reticularis and tenderness in the right flank. Her BP was 185/105 mmHg. Urinalysis showed blood 3+, protein 1+.

Investigations:

haemoglobin	129 g/L (115–165)
white cell count	8.7 × 10^9/L (4.0–11.0)
platelet count	83 × 10^9/L (150–400)

serum creatinine	106 µmol/L (60–110)

What antibody test is most likely to be positive?

A: ANCA ○

B: anticardiolipin ○

C: anticentromere ○

D: anti-glomerular basement membrane ○

E: antimitochondrial ○

Question 6

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What antibody test is most likely to be positive?

Answers

A: ANCA
B: anticardiolipin
C: anticentromere
D: anti-glomerular basement membrane
E: antimitochondrial

Correct answer: B

Explanation

She has antiphospholipid syndrome. The livedo reticularis, cognition problems and loin pain are a result of thrombosis. This patient likely has renal vein thrombosis accounting for loin pain and dipstick abnormalities. Anti-centromere is associated with scleroderma, anti-glomerular basement membrane with anti-GBM disease, antimitochondrial with primary biliary cirrhosis and ANCA with ANCA vasculitis.

Question 7

A 37-year-old woman presented with a history of intermittent lightheadedness.

Examination was normal.

Investigations:

ECG	normal
24-hour ambulatory ECG tracing	atrial and ventricular premature beats; nocturnal bradycardia and Mobitz type I atrioventricular block, and supraventricular tachycardia

Which abnormality on the 24-hour ambulatory ECG is clinically most important?

- A: atrial premature beats ○
- B: profound sleep-associated bradycardia ○
- C: supraventricular tachycardia ○
- D: transient Mobitz type I AV block ○
- E: ventricular premature beats ○

Question 7

No Answer Given

Incorrect

A 37-year-old woman presented with a history of intermittent lightheadedness.

Examination was normal.

Investigations:

ECG	normal
24-hour ambulatory ECG tracing	atrial and ventricular premature beats; nocturnal bradycardia and Mobitz type I atrioventricular block, and supraventricular tachycardia

Which abnormality on the 24-hour ambulatory ECG is clinically most important?

Answers

A: atrial premature beats
B: profound sleep-associated bradycardia
C: supraventricular tachycardia
D: transient Mobitz type I AV block
E: ventricular premature beats

Correct answer: C

Explanation

Supraventricular tachycardia is the best answer. It would provide a plausible explanation for the patient’s symptoms, and may merit specific treatment (either drugs or ablation).

Question 8

A 28-year-old man presented with a 1-month history of weight loss, abdominal distension, flatulence and foul-smelling diarrhoea following a visit to India.

Investigations:

anti-tissue transglutaminase antibodies	negative
stool cultures and microscopy	negative

What is the most likely diagnosis?

- A: acute HIV seroconversion illness ○
- B: coeliac disease ○
- C: giardiasis ○
- D: hookworm infection (ancylostomiasis) ○
- E: viral gastroenteritis ○

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No Answer Given

Incorrect

A 28-year-old man presented with a 1-month history of weight loss, abdominal distension, flatulence and foul-smelling diarrhoea following a visit to India.

Investigations:

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stool cultures and microscopy	negative

What is the most likely diagnosis?

Answers

A: acute HIV seroconversion illness
B: coeliac disease
C: giardiasis
D: hookworm infection (ancylostomiasis)
E: viral gastroenteritis

Correct answer: C

Explanation

The timing of the diarrhoeal symptoms and the travel history to an endemic area makes giardiasis the most likely diagnosis. Stool cultures are often falsely negative in giardiasis. Coeliac disease is much less likely as anti-tissue transglutaminase antibodies are negative. Viral gastroenteritis is unlikely to be so chronic. Acute HIV and hookworm rarely present in such a fashion and are less plausible than giardiasis.

Question 9

A 30-year-old woman presented with a 6-month history of tremor and difficulty in speaking.

On examination, she was found to have increased muscle tone in all four limbs, bradykinesia and 4-cm hepatomegaly.

What laboratory finding would best support a diagnosis of Wilson’s disease?

- A: increased incorporation of radioactive copper into caeruloplasmin ○
- B: low hepatic copper content ○
- C: low serum caeruloplasmin concentration ○
- D: low serum free copper concentration ○
- E: low urinary copper concentration ○

Question 9 ⌄ Next Question

Question 9

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Incorrect

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What laboratory finding would best support a diagnosis of Wilson's disease?

Answers

A: increased incorporation of radioactive copper into caeruloplasmin
B: low hepatic copper content
C: low serum caeruloplasmin concentration
D: low serum free copper concentration
E: low urinary copper concentration

Correct answer: C

Explanation

Wilson's disease is an autosomal recessive disorder of copper metabolism. Copper accumulation in tissue commonly presents with hepatic, neurological and psychiatric signs and symptoms. Levels of caeruloplasmin are low in most, but not all, cases. Hepatic, serum and urinary copper levels are all elevated. Caeruloplasmin is the molecule by which about 95% of copper is normally carried. In those affected by Wilson's disease, absence of ATP7B, also known as the Wilson's disease protein, means caeruloplasmin cannot be correctly synthesised in hepatocytes, resulting in an effective absence in serum.

Question 10
Next Question

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What dietary substrate is broken down into glucose and galactose by the action of intestinal enzymes?

- A: fructose ○
- B: lactose ○
- C: maltose ○
- D: mannose ○
- E: sucrose ○

Question 10

No Answer Given

Incorrect

What dietary substrate is broken down into glucose and galactose by the action of intestinal enzymes?

Answers

A: fructose
B: lactose
C: maltose
D: mannose
E: sucrose

Correct answer: B

Explanation

Lactose is a disaccharide which contains galactose and glucose. Maltose is a disaccharide, composed of glucose molecules. Glucose and fructose combine to form sucrose. Fructose is a monosaccharide and mannose is an aldohexose monomer.

Question 11

A 16-year-old girl presented with non-scaly, discrete areas of hair loss on the scalp. She had a history of atopic eczema and had a number of depigmented areas on her hands and around her eyes.

What is the most likely diagnosis?

A: alopecia areata ○

B: hypothyroidism ○

C: lupus erythematosus ○

D: seborrhoeic dermatitis ○

E: trichotillomania ○

Question 11 ⌄

Next Question

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A 16-year-old girl presented with non-scaly, discrete areas of hair loss on the scalp. She had a history of atopic eczema and had a number of depigmented areas on her hands and around her eyes.

What is the most likely diagnosis?

Answers

A: alopecia areata
B: hypothyroidism
C: lupus erythematosus
D: seborrhoeic dermatitis
E: trichotillomania

Correct answer: A

Explanation

Alopecia areata (option A) is an immunologically based disorder where there are discrete areas of hair loss but without scarring or scaling, and patients with this condition have a higher incidence of atopic eczema, hence option A is correct. In lupus erythematosus, there is usually active inflammation with scarring, whereas in trichotillomania, there are residual short hairs at the affected site, frequently of the same length, because the patient generally finds it difficult to pull the shorter newly growing hairs. Hypothyroidism can give patchy hair thinning with brittle, straw-like hair and bald patches, along with other symptoms of hypothyroidism (such as weight gain and constipation). Seborrhoeic dermatitis generally gives diffuse scaling on the scalp without hair loss; although it can cause some areas of hair loss, this would be associated with scaling of the scalp.

Question 12

A 72-year-old man presented following an episode of collapse. There had been two similar episodes recently, each lasting about 1 minute. He had had an anterior myocardial infarction 4 years previously.

On examination, he was orientated and symptom-free with a regular pulse of 80 beats/min. His BP was 140/80 mmHg and the apex beat was displaced to the left. There was an apical systolic murmur. There were no signs of trauma.

Investigations:

ECG	sinus rhythm; anterior Q waves and anterior ST-segment elevation without reciprocal depression

What is the most likely diagnosis?

A: acute anterior myocardial infarction ○

B: cerebral embolism ○

C: epilepsy ○

D: pulmonary embolism ○

E: ventricular tachycardia ○

Question 12

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Investigations:

ECG	sinus rhythm; anterior Q waves and anterior ST-segment elevation without reciprocal depression

What is the most likely diagnosis?

Answers

A: acute anterior myocardial infarction
B: cerebral embolism
C: epilepsy
D: pulmonary embolism
E: ventricular tachycardia

Correct answer: E

Explanation

Ventricular tachycardia is the best answer. The description of collapse is not comprehensive, but there have been several short-lasting, self-limiting episodes suggestive of cardiogenic syncope. The patient has a history of myocardial infarction, clinical evidence of cardiomegaly, and an ECG typical of left ventricular aneurysm (persistent ST elevation with Q waves). In this situation, ventricular tachyarrhythmia would be high on the differential list. Bradyarrhythmia would be a plausible alternative, but is not given as an option here.

The history of recurrent collapse is not suggestive of acute myocardial infarction.

This patient would be at fairly high risk for cerebral embolism, but this does not commonly present with isolated or recurrent syncope.

Epilepsy generally presents with more protracted loss of consciousness, and other features such as aura, posture and tone abnormalities, tongue-biting, incontinence, and post-ictal confusion, which are not present here.

Pulmonary embolus is another plausible, although less frequent, cause of collapse. However, there is no mention of chest pain or dyspnoea, and there are no particular risk factors, so it would be a less likely cause than arrhythmia in this case.

Question 13

A 26-year-old woman presented with unequal pupils.

On examination, the right pupil was larger than the left and did not react to light, directly or consensually. On accommodation, the right pupil reacted very slowly, but eventually became smaller than the left pupil.

What is the best description of this type of pupillary abnormality?

A: Adie’s tonic pupil ○

B: afferent pupillary defect ○

C: Argyll Robertson pupil ○

D: Horner’s syndrome ○

E: third cranial nerve palsy ○

Question 13

No Answer Given

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A 26-year-old woman presented with unequal pupils.

On examination, the right pupil was larger than the left and did not react to light, directly or consensually. On accommodation, the right pupil reacted very slowly, but eventually became smaller than the left pupil.

What is the best description of this type of pupillary abnormality?

Answers

A: Adie's tonic pupil
B: afferent pupillary defect
C: Argyll Robertson pupil
D: Horner's syndrome
E: third cranial nerve palsy

Correct answer: A

Explanation

This is a typical description of an Adie's pupil, often associated with reduced or absent deep tendon reflexes. An afferent pupillary defect is due to impaired ipsilateral optic nerve function, causing brief paradoxical pupillary dilatation to light with the "swinging torch" test. Argyll Robertson pupils accommodate but do not react and are typically bilaterally small. A Horner's would include ptosis with ipsilateral small pupil, and a third cranial nerve palsy might include ipsilateral ptosis and pupillary enlargement.

Question 14

A 45-year-old man had recurrent nephrolithiasis. Renal function tests and serum calcium measurements were normal.

Investigations:

24-h urinary calcium	8.8 mmol (2.5–7.5)
24-h urinary urate	3.0 mmol (<3.6)
24-h urinary oxalate	0.20 mmol (0.14–0.46)
24-h urinary citrate	0.2 mmol (0.3–3.4)

What is the most useful therapy to reduce stone formation?

A: allopurinol ○

B: bendroflumethiazide ○

C: dietary calcium restriction ○

D: penicillamine ○

E: potassium citrate ○

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What is the most useful therapy to reduce stone formation?

Answers

A: allopurinol
B: bendroflumethiazide
C: dietary calcium restriction
D: penicillamine
E: potassium citrate

Correct answer: E

Explanation

The 24-h urinary calcium is marginally elevated and is not an indication for thiazide diuretic therapy. Urinary citrate reduces urinary supersaturation of calcium salts by forming soluble complexes with calcium ions, and by inhibiting crystal growth and aggregation, hence the use of potassium citrate in recurrent stone formation. There are no data to warrant the use of allopurinol (for acute uric acid nephropathy) or penicillamine. Low-calcium diets lead to increased oxalate absorption production, which is counterproductive.

Question 15

A 38-year-old woman required extraction of her wisdom teeth. She gave a history of haemorrhage after a dental extraction 10 years previously, when she had required suturing. There had been no history of excessive bleeding before this.

What is the most likely diagnosis?

A: factor V Leiden ○

B: factor IX deficiency ○

C: factor XII deficiency ○

D: primary antiphospholipid syndrome ○

E: von Willebrand disease ○

Question 15

No Answer Given

Incorrect

A 38-year-old woman required extraction of her wisdom teeth. She gave a history of haemorrhage after a dental extraction 10 years previously, when she had required suturing. There had been no history of excessive bleeding before this.

What is the most likely diagnosis?

Answers

A: factor V Leiden
B: factor IX deficiency
C: factor XII deficiency
D: primary antiphospholipid syndrome
E: von Willebrand disease

Correct answer: E

Explanation

The question stem implies that there is a longstanding tendency to bleed following dental extraction. The answer options require the candidate to select the most likely disorder that could explain this bleeding.

Von Willebrand disease is the correct answer as this is a relatively common bleeding disorder that can manifest in adults, as excessive bleeding after dental extractions or other minor surgical procedures. On further questioning of female patients, there is often a history of menorrhagia. Factor V Leiden is not correct as this is an inherited disorder that is associated with an increased risk of thrombosis, not bleeding. Factor IX deficiency is an X-linked recessive disorder and would not be expected to affect females or a 38-year-old patient. Factor XII deficiency is a rare autosomal recessive condition that is not associated with a bleeding tendency in the majority of cases, although it is associated with a marked prolongation of the activated partial thromboplastin time and may, incorrectly, be assumed to influence bleeding risk. Primary antiphospholipid syndrome is associated with a tendency to thrombosis, not bleeding.

Question 16

A 30-year-old man presented with increasing breathlessness and wheeze. He smoked 5 cigarettes per day.

Investigations:

serum α_1-antitrypsin	0.12 g/L (1.1–2.1)

FEV_1	0.85 L (3.4–5.1)
FVC	4.75 L (4.2–6.5)
transfer factor for CO (TL_{CO})	4.1 mmol/min/kPa (7.1–12.7)

Which protease inhibitor phenotype is most likely to be present?

A: MM ○

B: MZ ○

C: SS ○

D: SZ ○

E: ZZ ○

Question 16
Next Question

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No Answer Given

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Which protease inhibitor phenotype is most likely to be present?

Answers

A: MM
B: MZ
C: SS
D: SZ
E: ZZ

Correct answer: E

Explanation

Extremely low serum α_1-antitrypsin levels are associated with severe phenotype. This causes obstructive airways disease. The S genotype is an intermediate deficiency and M is normal, wild type.

Question 17
Next Question

Question 17

A 35-year-old woman with chronic kidney disease stage V was being considered for erythropoietin therapy; her eGFR was 12 mL/min/1.73 m^2 (>60).

On examination, her BP was 140/90 mmHg and she had an arteriovenous fistula in situ for planned haemodialysis.

Investigations:

haemoglobin	95 g/L (115–165)
MCV	84 fL (80–96)

What is the most likely outcome of erythropoietin therapy?

- A: improved BP control ○
- B: improved exercise tolerance ○
- C: increased ventricular hypertrophy ○
- D: reduced likelihood of red cell aplasia ○
- E: stabilisation of renal function ○

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Investigations:

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What is the most likely outcome of erythropoietin therapy?

Answers

A: improved BP control
B: improved exercise tolerance
C: increased ventricular hypertrophy
D: reduced likelihood of red cell aplasia
E: stabilisation of renal function

Correct answer: B

Explanation

Erythropoietin therapy will stimulate bone marrow production of red blood cells and allow more oxygen delivery to her tissues for better exercise tolerance. Erythropoietin has the potential to worsen BP control, but studies have shown that its use is associated with reduction of left ventricular hypertrophy in patients with advanced renal impairment and anaemia. It has no effect on renal function. There have been reports of erythropoietin-induced red cell aplasia although this is now rare with the use of newer forms of erythropoietin.

Question 18

A 54-year-old woman, who had undergone subtotal thyroidectomy for Graves’ disease 20 years previously, presented for a review of her recent blood tests. She was well.

Investigations:

serum cholesterol	6.8 mmol/L (<5.2)
serum HDL cholesterol	1.10 mmol/L (>1.55)
serum thyroid-stimulating hormone	16.2 mU/L (0.4–5.0)
serum free T4	13.0 pmol/L (10.0–22.0)

What is the most appropriate initial treatment for her hyperlipidaemia?

A: atorvastatin ○

B: bempedoic acid ○

C: ezetimibe ○

D: levothyroxine ○

E: oestrogen replacement therapy ○

Question 18

No Answer Given

Incorrect

A 54-year-old woman, who had undergone subtotal thyroidectomy for Graves' disease 20 years previously, presented for a review of her recent blood tests. She was well.

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What is the most appropriate initial treatment for her hyperlipidaemia?

Answers

A: atorvastatin
B: bempedoic acid
C: ezetimibe
D: levothyroxine
E: oestrogen replacement therapy

Correct answer: D

Explanation

This question is testing the candidate's understanding of secondary causes of hypercholesterolaemia. The history of a subtotal thyroidectomy would make thyroid dysfunction probable. Correcting an underactive thyroid is important as it is likely to reduce cholesterol levels; also, starting cholesterol-lowering medication in patients who are hypothyroid can increase the risk of adverse effects (myalgia) hence levothyroxine is the best initial treatment.

Question 19 ⌄
Next Question

Question 19

A 27-year-old woman presented with a right-sided thyroid swelling with associated cervical lymphadenopathy.

What is the most likely cause?

- A: anaplastic carcinoma ○
- B: follicular adenoma ○
- C: follicular carcinoma ○
- D: Hashimoto’s thyroiditis ○
- E: papillary carcinoma ○

Question 19

No Answer Given

Incorrect

A 27-year-old woman presented with a right-sided thyroid swelling with associated cervical lymphadenopathy.

What is the most likely cause?

Answers

A: anaplastic carcinoma
B: follicular adenoma
C: follicular carcinoma
D: Hashimoto’s thyroiditis
E: papillary carcinoma

Correct answer: E

Explanation

Malignancy must be considered in any patient with thyroid swelling and associated cervical lymphadenopathy. Papillary thyroid carcinoma is the most common thyroid malignancy and, therefore, in the absence of any further patient history or information in the question, is the correct answer.

Question 20

A 77-year-old man presented with increasing pains around his lower back and lower limb girdle. He had recently presented with symptoms of hesitancy and post-micturition dribbling.

Investigations:

ESR	28 mm/1st h (<20)
serum adjusted calcium	2.34 mmol/L (2.20–2.60)
serum phosphate	0.80 mmol/L (0.80–1.45)
serum alkaline phosphatase	2985 U/L (45–105)
serum prostate-specific antigen	6 μg/L (<4.0)

What is the most likely cause of this man’s pain?

A: insufficiency fracture of the pelvis ○

B: osteomalacia ○

C: Paget’s disease of bone ○

D: polymyalgia rheumatica ○

E: prostatic carcinoma with metastases ○

Question 20

No Answer Given

Incorrect

A 77-year-old man presented with increasing pains around his lower back and lower limb girdle. He had recently presented with symptoms of hesitancy and post-micturition dribbling.

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serum alkaline phosphatase	2985 U/L (45–105)
serum prostate-specific antigen	6 μg/L (<4.0)

What is the most likely cause of this man’s pain?

Answers

A: insufficiency fracture of the pelvis
B: osteomalacia
C: Paget’s disease of bone
D: polymyalgia rheumatica
E: prostatic carcinoma with metastases

Correct answer: C

Explanation

The history of localised bony pain with significantly elevated serum alkaline phosphatase and normal serum adjusted calcium and serum phosphate in an elderly man is entirely consistent with a diagnosis of Paget's disease.

The history is not suggestive of insufficiency fracture of the pelvis. In osteomalacia, you would expect to see decreased serum adjusted calcium and serum phosphate alongside the raised serum alkaline phosphatase. While he has pain around his pelvic girdle, the ESR is normal for his age and elevated serum alkaline phosphatase would make polymyalgia rheumatica unlikely. In advanced metastatic prostate cancer, you would expect to see a greater elevation in serum prostate-specific antigen and raised serum adjusted calcium and phosphate. Lower urinary tract symptoms of hesitancy and post-micturition dribbling are very common in this age group.

Question 21

A 50-year-old man presented with a 2-day history of multiple painful joints. Two weeks previously, he had been started on treatment with allopurinol for tophaceous gout. His only other medication was paracetamol. He had a history of excess alcohol intake.

On examination, his temperature was 37.5°C and there was acute inflammation of the finger joints, wrists, knees and ankles.

Investigations:

serum gamma glutamyl transferase	90 U/L (<50)
serum CRP	180 mg/L (<10)
serum urate	0.65 mmol/L (0.23–0.46)

What is the most likely cause of his symptoms?

A: acute calcium pyrophosphate deposition disease (pseudogout) ○

B: alcohol intake ○

C: allergic reaction to allopurinol ○

D: allopurinol therapy ○

E: septic arthritis ○

Question 21

No Answer Given

Incorrect

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What is the most likely cause of his symptoms?

Answers

A: acute calcium pyrophosphate deposition disease (pseudogout)
B: alcohol intake
C: allergic reaction to allopurinol
D: allopurinol therapy
E: septic arthritis

Correct answer: D

Explanation

The stem gives information that this man has gout. Urate-lowering therapy commonly leads to acute flares of gout, thought due to falling serum urate levels leading to uric acid crystals detaching from articular cartilage. It’s good practice to offer prophylaxis with NSAID or colchicine for the first 6 months of allopurinol therapy. Calcium pyrophosphate deposition disease (pseudogout) tends to be monoarticular and isn’t associated with alcohol intake or allopurinol use, and tends to affect an older population. Alcohol intake can affect gout in two ways: firstly some forms of alcohol, particularly beer, contain higher levels of purine which are broken down into uric acid, and secondly, alcohol is excreted preferentially in the kidneys compared to uric acid so it can also reduce excretion. Overall, alcohol can increase your risk of developing gout, and may precipitate a flare, but initiation of urate lowering therapy is the more likely culprit in this scenario. Allergic reactions to allopurinol tend to involve rash, hypotension and systemic upset rather than joint pain. Septic arthritis can be a differential diagnosis for acute gout, but that would tend to be a monoarthritis, and this patient doesn’t have risk factors for polyarticular septic arthritis, his temperature isn’t high enough, and the mild serum CRP elevation also doesn’t favour sepsis.

Question 22
Next Question

Question 22

A 17-year-old boy presented with breathlessness and night sweats.

Investigations confirmed a diagnosis of Burkitt lymphoma.

What is the most likely underlying abnormality of gene expression?

- A: expression of BCR-ABL ○
- B: loss of p53 ○
- C: overexpression of BCL-2 ○
- D: overexpression of c-Myc ○
- E: overexpression of JAK2 ○

Question 22

No Answer Given

Incorrect

A 17-year-old boy presented with breathlessness and night sweats.

Investigations confirmed a diagnosis of Burkitt lymphoma.

What is the most likely underlying abnormality of gene expression?

Answers

A: expression of BCR-ABL
B: loss of p53
C: overexpression of BCL-2
D: overexpression of c-Myc
E: overexpression of JAK2

Correct answer: D

Explanation

Burkitt lymphoma is an aggressive non-Hodgkin lymphoma characterised by the overexpression of c-Myc, most usually due to a chromosomal translocation between chromosomes 8 and 14, bringing the c-Myc gene under the control of the immunoglobulin heavy chain promoter and thus rendering it constitutively active. BCR-ABL is associated with chronic myeloid leukaemia, TP53 mutations are associated with various different cancer types, overexpression of BCL2 is associated with B-cell non-Hodgkin lymphoma although not specifically with Burkitt lymphoma, and JAK2 mutations are associated typically with myeloproliferative disease in particular primary polycythaemia.

Question 23

A 37-year-old woman with immune thrombocytopenia failed to respond to corticosteroid therapy. Splenectomy was planned.

What is the optimum time for pneumococcal vaccination?

- A: 1 month after surgery ○
- B: 1 month before surgery ○
- C: 1 week after surgery ○
- D: 1 week before surgery ○
- E: perioperatively ○

Question 23
Next Question

Question 23

No Answer Given

Incorrect

A 37-year-old woman with immune thrombocytopenia failed to respond to corticosteroid therapy. Splenectomy was planned.

What is the optimum time for pneumococcal vaccination?

Answers

A: 1 month after surgery
B: 1 month before surgery
C: 1 week after surgery
D: 1 week before surgery
E: perioperatively

Correct answer: B

Explanation

Overwhelming post-splenectomy infection (OPSI) is life-threatening and vaccination against encapsulated bacteria, especially pneumococcus decreases its incidence. In a study, splenectomised subjects who had inadequate antibody levels were significantly more likely to have received their initial vaccination less than 14 days before or after splenectomy. Guidelines in the Green book recommend “Those requiring splenectomy or commencing immunosuppressive treatment should be vaccinated against pneumococcus. Ideally, the vaccines should be given 4–6 weeks before elective splenectomy or initiation of treatment such as chemotherapy or radiotherapy. Where this is not possible, it can be given up to two weeks before treatment. If it is not possible to vaccinate beforehand, splenectomy, chemotherapy or radiotherapy should never be delayed.”

Question 24

A 30-year-old man had moved recently to the UK. He informed his doctor that he had maturity-onset diabetes of the young.

What feature, if present, most strongly suggests that this is the correct diagnosis?

A: BMI of 30.0 kg/m^2 (18.0–25.0) ○

B: poor response to glipizide therapy ○

C: recurrent episodes of diabetic ketoacidosis ○

D: strong family history of diabetes mellitus ○

E: X-linked recessive inheritance ○

Question 24 ⌄

Next Question

Question 24

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A 30-year-old man had moved recently to the UK. He informed his doctor that he had maturity-onset diabetes of the young.

What feature, if present, most strongly suggests that this is the correct diagnosis?

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A: BMI of 30.0 kg/m^2 (18.0–25.0)
B: poor response to glipizide therapy
C: recurrent episodes of diabetic ketoacidosis
D: strong family history of diabetes mellitus
E: X-linked recessive inheritance

Correct answer: D

Explanation

Maturity-onset diabetes of the young (MODY) should be considered in a young person with diabetes with atypical features. Family history (especially of younger onset diabetes) is important to identify as this would prompt consideration of MODY. The other options would not strongly suggest nor are particularly associated with MODY.

Question 25

A 17-year-old girl presented with a single, painless, enlarged cervical lymph node. She was asymptomatic.

Investigations:

chest X-ray	enlarged mediastinal lymph nodes

What is the most likely diagnosis?

- A: angioimmunoblastic T-cell lymphoma ○
- B: extramedullary plasmacytoma ○
- C: follicular B-cell non-Hodgkin lymphoma ○
- D: Hodgkin lymphoma ○
- E: mantle cell lymphoma ○

Question 25

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Incorrect

A 17-year-old girl presented with a single, painless, enlarged cervical lymph node. She was asymptomatic.

Investigations:

chest X-ray	enlarged mediastinal lymph nodes

What is the most likely diagnosis?

Answers

A: angioimmunoblastic T-cell lymphoma
B: extramedullary plasmacytoma
C: follicular B-cell non-Hodgkin lymphoma
D: Hodgkin lymphoma
E: mantle cell lymphoma

Correct answer: D

Explanation

The stem makes clear that this adolescent female has cervical and mediastinal lymphadenopathy. She has no other described symptoms and so it should be presumed that she is otherwise well. The presence of mediastinal lymphadenopathy should be considered pathological.

The most common single malignant diagnosis in a patient of this age is Hodgkin lymphoma. This condition most commonly presents with neck and mediastinal lymphadenopathy and is a condition with a peak in incidence during adolescence. Patients may be asymptomatic.

Angioimmunoblastic T-cell lymphoma is uncommon in this age group and would classically present with more widespread lymphadenopathy and a rash.

Extramedullary plasmacytoma would be unlikely in this age group and would classically present with lesions in the upper respiratory tract, such as the oropharynx.

Follicular B-cell non-Hodgkin lymphoma would be much less likely than Hodgkin lymphoma in this age group, although it could present with asymptomatic lymphadenopathy.

Mantle cell lymphoma is unlikely in this age group and would be expected to present with more widespread lymphadenopathy and splenomegaly.

Question 26

A 70-year-old man presented accompanied by his wife, who stated that her husband had lost all interest in life.

What would support a diagnosis of dementia rather than depressive disorder?

- A: agitation ○
- B: complaint of poor memory ○
- C: impaired short-term memory ○
- D: loss of libido ○
- E: urinary incontinence ○

Question 26
Next Question

Question 26

No Answer Given

Incorrect

A 70-year-old man presented accompanied by his wife, who stated that her husband had lost all interest in life.

What would support a diagnosis of dementia rather than depressive disorder?

Answers

A: agitation
B: complaint of poor memory
C: impaired short-term memory
D: loss of libido
E: urinary incontinence

Correct answer: E

Explanation

Poor memory can be seen in depression, particularly when severe (a ‘depressive pseudodementia’). Agitation can occur in both depression and dementia. Loss of libido is common in depression. Urinary incontinence is very rare in depression and occurs in dementia, especially as it advances.

Question 27
Next Question

Question 27

A 48-year-old woman was admitted to the emergency department with a 2-hour history of haemoptysis. She had been treated for pulmonary tuberculosis when she was 30 years old and had developed a right upper lobe cavity containing an aspergilloma. She continued to cough up large amounts of blood over the next 24 hours and the decision was made to perform a radiologically guided embolisation.

Which blood vessel is most likely to be the target for embolisation?

- A: brachiocephalic artery ○
- B: bronchial artery ○
- C: intercostal artery ○
- D: internal thoracic artery ○
- E: pulmonary artery ○

Question 27

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Which blood vessel is most likely to be the target for embolisation?

Answers

A: brachiocephalic artery
B: bronchial artery
C: intercostal artery
D: internal thoracic artery
E: pulmonary artery

Correct answer: B

Explanation

The most frequent diseases causing haemoptysis are bronchiectasis, tuberculosis, fungal infections and cancer. Causes of bleeding from the large vessels include infectious, cardiovascular, congenital, neoplastic and vasculitic diseases. In cases of severe haemoptysis requiring treatment, the source of bleeding originates from bronchial and pulmonary arteries in 90% and 5% of cases, respectively.

Question 28
Next Question

Question 28

A 32-year-old woman returned from a holiday in the Mediterranean with a suntan and numerous hypopigmented, slightly scaly lesions on the neck and upper trunk. She mentioned that the same areas had been fawn-coloured in the months before her holiday and that these areas of skin had failed to tan during her time in the Mediterranean.

What is the most likely diagnosis?

A: chronic plaque psoriasis ○

B: discoid eczema ○

C: pityriasis rosea ○

D: pityriasis versicolor ○

E: seborrhoeic dermatitis ○

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What is the most likely diagnosis?

Answers

A: chronic plaque psoriasis
B: discoid eczema
C: pityriasis rosea
D: pityriasis versicolor
E: seborrhoeic dermatitis

Correct answer: D

Explanation

The correct answer is pityriasis versicolor, which typically affects the neck and upper trunk, causing beige- or fawn-coloured areas on untanned skin but these areas become hypopigmented while the rest of the patient's skin becomes tanned following repeated sun exposure. Sun exposure can improve some other skin diseases such as psoriasis and eczema, and this may result in hypopigmented areas at the site of the previous lesions in some cases, but one would expect a history of lesions at other sites, for example on the upper and lower limbs, as well as on the trunk. Seborrhoeic dermatitis is a common cause of dandruff and consists of an erythematous, scaly, macular rash affecting the scalp, eyebrows, nasolabial folds and, less frequently, the centre of the chest (presternal region), axillae and perianal area. Pityriasis rosea affects the trunk and limbs, and starts with a "herald patch" (a single patch) followed 1–2 weeks later by more generalised erythematous scaly patches on the trunk and upper limbs, which slowly spread downwards to the thighs and subsequently fade over the next 6–8 weeks.

Question 29

A 65-year-old woman developed bilateral lower limb swelling. She had been taking regular ibuprofen for joint pain for the previous 2 weeks. She had a past medical history of urinary tract infections.

On examination, her BP was 139/98 mmHg and she had pitting oedema below the knees. Urinalysis showed protein 2+, red blood cells 1+, leukocytes 3+ and no nitrites.

Investigations:

serum creatinine	458 µmol/L (60–110)
urine protein:creatinine ratio	130 mg/mmol (<30)

What is the most likely cause of the renal impairment?

A: acute tubular necrosis ○

B: IgA nephropathy ○

C: membranous glomerulonephropathy ○

D: papillary necrosis ○

E: tubulointerstitial nephritis ○

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Answers

A: acute tubular necrosis
B: IgA nephropathy
C: membranous glomerulonephropathy
D: papillary necrosis
E: tubulointerstitial nephritis

Correct answer: E

Explanation

She has acute kidney injury with modest proteinuria and leukocyturia which is in keeping with interstitial nephritis. NSAIDs are associated with interstitial nephritis. Acute tubular necrosis is classically associated with a bland urinalysis. IgA nephropathy is not associated with NSAID use and is therefore less likely. Membranous glomerulonephropathy is more commonly associated with nephrotic range proteinuria (urine PCR >300mg/mmol). Papillary necrosis can be associated with NSAID use but also with flank pain and higher levels of haematuria. A renal biopsy would be required to differentiate between the possible causes for her renal impairment but tubulointerstitial nephritis is the most likely diagnosis based on the information given.

Question 30

A 47-year-old man presented with a 6-month history of episodic sweating and hunger. He had gained 10 kg in weight and drank 10 units of alcohol per week.

Investigations:

full blood count	normal
fasting plasma glucose	3.0 mmol/L (3.0–6.0)
liver function tests	normal

What is the most appropriate next investigation?

A: CT scan of pancreas ○

B: endoscopic ultrasound scan of pancreas ○

C: plasma glucose concentration following a prolonged (72-h) fast ○

D: serum C-peptide concentration ○

E: serum insulin levels ○

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Answers

A: CT scan of pancreas
B: endoscopic ultrasound scan of pancreas
C: plasma glucose concentration following a prolonged (72-h) fast
D: serum C-peptide concentration
E: serum insulin levels

Correct answer: C

Explanation

Recurrent sweating and hunger in the presence of weight gain and a borderline low fasting glucose profile prompts the consideration for insulinoma. Measuring prolonged (72-h) fasting glucose levels is the gold standard initial test for insulinoma.

CT scan or ultrasound are not appropriate initial investigations without proving true hypoglycaemia and might miss an insulinoma. There is not enough to suggest that the patient needs investigation for epilepsy. Home glucose monitoring will not aid the diagnosis. Serum C-peptide and serum insulin levels are not diagnostic in the absence of true hypoglycaemia.

Question 31

A 25-year-old woman presented complaining of having loose stools five to six times per day. One year previously, she had undergone resection of her terminal ileum for Crohn’s disease. Her only drug therapy was mesalazine.

On examination, there was no abdominal tenderness.

Investigations:

haemoglobin	126 g/L (115–165)
serum albumin	38 g/L (37–49)
faecal calprotectin	65 μg/g (<50)

What is the most likely diagnosis?

A: active Crohn’s disease ○

B: adverse effect of mesalazine ○

C: bile salt-induced diarrhoea ○

D: enteric infection ○

E: irritable bowel syndrome ○

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What is the most likely diagnosis?

Answers

A: active Crohn’s disease
B: adverse effect of mesalazine
C: bile salt-induced diarrhoea
D: enteric infection
E: irritable bowel syndrome

Correct answer: C

Explanation

Bile salt-induced diarrhoea (or malabsorption) is a common and recognised consequence of terminal ileal resection as bile salts are reabsorbed in the terminal ileum. Loss of the terminal ileum leads to excess bile salts in the colon which can act as an irritant, causing diarrhoea. Active Crohn’s disease is less likely, as the faecal calprotectin (minimally elevated but within accepted range) and haemoglobin are normal. Adverse effects of mesalazine tend to occur soon after initial prescription. Enteric infection is less likely from the chronicity of symptoms given. While irritable bowel syndrome is a possible orrect answer and is recognised to occur in inflammatory bowel disease, bile salt remains more likely in the context of a terminal ileal resection and needs to be excluded first.

Question 32

A 71-year-old woman required a transfusion of 2 units of blood after a hip replacement. One week later, her haemoglobin concentration had fallen by 42 g/L.

What associated finding is most likely to indicate a delayed transfusion reaction?

- A: conjugated hyperbilirubinaemia ○
- B: elevated D-dimer ○
- C: haemoglobinuria ○
- D: haemosiderinuria ○
- E: positive direct antiglobulin test ○

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No Answer Given

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What associated finding is most likely to indicate a delayed transfusion reaction?

Answers

A: conjugated hyperbilirubinaemia
B: elevated D-dimer
C: haemoglobinuria
D: haemosiderinuria
E: positive direct antiglobulin test

Correct answer: E

Explanation

A delayed haemolytic transfusion, by definition, occurs more than 24 hours after transfusion but is usually clinically evident approximately 2 weeks after transfusion. It is caused by boosting of a previously generated alloantibody and causes a positive direct antiglobulin test, a raised unconjugated bilirubin with clinical jaundice, anaemia, reticulocytosis and a raised lactase dehydrogenase. The blood transfusion antibody screen is positive and spherocytosis is seen on examination of the blood film. An unexplained fever typically occurs. Haemoglobinuria would indicate a more significant acute haemolytic transfusion reaction (this is delayed, and more benign) and haemosiderinuria a more chronic haemolytic condition.

Question 33

A 30-year-old woman presented with a 4-hour history of palpitations. She had no significant medical history.

Investigations:

ECG	atrial fibrillation with a ventricular rate of 130 beats/min

What drug is most likely to restore sinus rhythm?

- A: adenosine ○
- B: bisoprolol ○
- C: esmolol ○
- D: flecainide ○
- E: verapamil ○

Question 33

Next Question

Question 33

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Incorrect

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Investigations:

ECG	atrial fibrillation with a ventricular rate of 130 beats/min

What drug is most likely to restore sinus rhythm?

Answers

A: adenosine
B: bisoprolol
C: esmolol
D: flecainide
E: verapamil

Correct answer: D

Explanation

Flecainide is the best answer. Of the drugs listed, it is the one most likely to restore sinus rhythm in a young patient with acute-onset atrial fibrillation. It is particularly indicated in patients who have accessory pathways. Care has to be taken, however, to avoid using the drug in patients with left ventricular dysfunction or ischaemic heart disease as it is negatively inotropic.

There is no role for adenosine in the treatment or diagnosis of atrial fibrillation. Bisoprolol, esmolol, and verapamil might all restore sinus rhythm, but are less efficacious for this indication than flecainide.

Question 34

A 20-year-old woman presented with a 2-month history of an intensely pruritic rash on her trunk and limbs. She was otherwise well.

On examination, she had multiple, violaceous, flat-topped papules over the flexor surfaces of the wrists, and on the ankles and lower back. The papules were aggregated in a linear fashion at one site on her left forearm.

What clinical feature is most likely to be present?

A: asymmetric oligoarthritis ○

B: burrows in finger webs ○

C: conjunctival scarring ○

D: involvement of buccal mucosa ○

E: non-scarring alopecia ○

Question 34 ⌄

Next Question

Question 34

No Answer Given

Incorrect

A 20-year-old woman presented with a 2-month history of an intensely pruritic rash on her trunk and limbs. She was otherwise well.

On examination, she had multiple, violaceous, flat-topped papules over the flexor surfaces of the wrists, and on the ankles and lower back. The papules were aggregated in a linear fashion at one site on her left forearm.

What clinical feature is most likely to be present?

Answers

A: asymmetric oligoarthritis
B: burrows in finger webs
C: conjunctival scarring
D: involvement of buccal mucosa
E: non-scarring alopecia

Correct answer: D

Explanation

Lichen planus causes violaceous, flat-topped papules, which are often seen on the flexor surfaces of the wrists, lower back and ankles as well as elsewhere on the skin. Lichen planus can koebnerise, which is when the lesions arise at an area of skin that has been traumatised, and the linear pattern on left forearm would be consistent with koebnerisation from scratching. Lichen planus frequently causes a lacy, white pattern on the buccal mucosa, hence involvement of the buccal mucosa is the orrect answer. When lichen planus affects the scalp (i.e. lichen planopilaris), it causes a scarring alopecia, so non-scarring alopecia is unlikely. Conjunctival scarring with lichen planus has been reported but this is uncommon, so is incorrect. Burrows in finger webs are seen in scabies, not lichen planus, so this option is incorrect. Lichen planus does not affect the joints, so is incorrect.

Question 35

A 60-year-old woman with rheumatoid arthritis presented with an acutely inflamed right knee. The joint was aspirated and methylprednisolone 80 mg was injected after the removal of 20 mL of non-purulent synovial fluid. The knee improved following this procedure but her symptoms recurred and became much worse a week later.

Investigations:

haemoglobin	105 g/L (115–165)
white cell count	15.5 × 10^9/L (4.0–11.0)
neutrophil count	13.5 × 10^9/L (1.5–7.0)
ESR	55 mm/1st h (<30)

What is the most appropriate next investigation?

A: blood cultures ○

B: serum CRP ○

C: serum urate ○

D: synovial fluid culture ○

E: X-ray of right knee ○

Question 35

No Answer Given

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A 60-year-old woman with rheumatoid arthritis presented with an acutely inflamed right knee. The joint was aspirated and methylprednisolone 80 mg was injected after the removal of 20 mL of non-purulent synovial fluid. The knee improved following this procedure but her symptoms recurred and became much worse a week later.

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What is the most appropriate next investigation?

Answers

A: blood cultures
B: serum CRP
C: serum urate
D: synovial fluid culture
E: X-ray of right knee

Correct answer: D

Explanation

The scenario in question is typical for septic arthritis following joint injection, which is a known complication of the procedure, with an estimated prevalence of 4 cases per 10 000 injections. The 2006 British Society for Rheumatology guidelines state that all patients with an acute hot joint should have the diagnosis of septic arthritis considered, and that all should have blood cultures taken. However, synovial fluid microscopy and culture is essential to aid in diagnosis and patients should be referred as soon as possible to the team locally with the skills to do this.

Serum CRP is a non-specific marker of inflammation and could be raised in a flare of rheumatoid arthritis, or for numerous other reasons. Crystal arthropathy is a well-recognised cause of monoarthritis but the clinical history makes this less likely and the urate level can be normal in up to 25% of patients during an acute attack so would not exclude the diagnosis. Finally, X-ray of the knee will most likely be normal in the acute phase of septic arthritis or may show old changes, but cannot be used to confirm the cause of the swollen joint.

Question 36

A 75-year-old man presented with weight loss, lethargy and repeated haemoptysis. He had been treated for pulmonary tuberculosis 10 years previously.

Investigations:

serum IgE for Aspergillus	positive
serum IgG for Aspergillus	positive
chest X-ray	solid lesion with an adjacent crescent-shaped radiolucency at the left lung apex

What is the most likely diagnosis?

A: allergic bronchopulmonary aspergillosis ○

B: angio-invasive aspergillosis ○

C: aspergilloma ○

D: bronchial carcinoma ○

E: reactivation of tuberculosis ○

Question 36

No Answer Given

Incorrect

A 75-year-old man presented with weight loss, lethargy and repeated haemoptysis. He had been treated for pulmonary tuberculosis 10 years previously.

Investigations:

serum IgE for Aspergillus	positive
serum IgG for Aspergillus	positive
chest X-ray	solid lesion with an adjacent crescent-shaped radiolucency at the left lung apex

What is the most likely diagnosis?

Answers

A: allergic bronchopulmonary aspergillosis
B: angio-invasive aspergillosis
C: aspergilloma
D: bronchial carcinoma
E: reactivation of tuberculosis

Correct answer: C

Explanation

The differential diagnosis for this presentation includes all of the conditions listed. The positive serum IgE and IgG for Aspergillus are indicative of an active inflammatory reaction against it. Aspergillus thrives in poorly drained and avascular cavitary spaces within the lung. Once harbored within a cavitary airspace, it adheres to the wall with its conidia, then germinates and, in the process, evokes an inflammatory reaction. The organism, along with the inflammatory debris, forms an amorphous mass identified as an aspergilloma, and a solid lesion with an adjacent crescentic shaped radiolucency on chest X-ray strongly suggest an aspergilloma within an existing lung cavity. Angio-invasive aspergillosis will not present with a solid mass and only occurs in someone who is immunosuppressed. Patients with allergic bronchopulmonary aspergillosis have proximal bronchiectasis and present with productive cough and wheeze and not likely haemoptysis.

Question 37

A 24-year-old man presented with agitation and central chest pain. He had been taking cocaine earlier that day.

On examination, he had a pulse of 100 beats/min and a BP of 170/110 mmHg.

What complication is most likely?

- A: hypercalcaemia ○
- B: hyperkalaemia ○
- C: hyperthermia ○
- D: hyponatraemia ○
- E: hypothermia ○

Question 37 ⌄ | Next Question

Question 37

No Answer Given

Incorrect

A 24-year-old man presented with agitation and central chest pain. He had been taking cocaine earlier that day.

On examination, he had a pulse of 100 beats/min and a BP of 170/110 mmHg.

What complication is most likely?

Answers

A: hypercalcaemia
B: hyperkalaemia
C: hyperthermia
D: hyponatraemia
E: hypothermia

Correct answer: C

Explanation

Cocaine is a sympathomimetic drug that causes chest pain, hypertension, agitation and arrhythmias.

Hyperthermia and rhabdomyolysis are recognised complications resulting from its serotoninergic effects.

Question 38

A 51-year-old woman presented with a 6-month history of intermittent episodes of arthralgia, rash and fevers. She complained of increasing fatigue, breathlessness and swollen ankles over the previous 2 months.

On examination, she had a purpuric rash on the lower extremities and a right-sided pleural effusion. Urinalysis showed blood 1+, protein 3+.

Investigations:

ESR	140 mm/1st h (<30)
serum creatinine	140 µmol/L (60–110)
serum complement C4	<5 mg/dL (15–50)
antinuclear antibodies	1:600 dilution (negative at 1:20)
rheumatoid factor	90 kIU/L (<30)

What is the most likely diagnosis?

A: IgA vascultis ○

B: microscopic polyangiitis ○

C: mixed cryoglobulinaemia ○

D: rheumatoid arthritis ○

E: systemic lupus erythematosus ○

Question 38

No Answer Given

Incorrect

A 51-year-old woman presented with a 6-month history of intermittent episodes of arthralgia, rash and fevers. She complained of increasing fatigue, breathlessness and swollen ankles over the previous 2 months.

On examination, she had a purpuric rash on the lower extremities and a right-sided pleural effusion. Urinalysis showed blood 1+, protein 3+.

Investigations:

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antinuclear antibodies	1:600 dilution (negative at 1:20)
rheumatoid factor	90 kIU/L (<30)

What is the most likely diagnosis?

Answers

A: IgA vascultis
B: microscopic polyangiitis
C: mixed cryoglobulinaemia
D: rheumatoid arthritis
E: systemic lupus erythematosus

Correct answer: E

Explanation

The stem describes multisystem involvement. Investigations show a multisystem inflammatory complement-consuming illness. Systemic lupus erythematosus is the most likely cause for this clinical presentation: it has musculoskeletal, renal and skin symptomatology and systemic manifestation. IgA vasculitis is not common in this age group and pleural involvement is extremely rare. Microscopic polyangiitis would affect the lung parenchyma and not pleura. Mixed cryoglobulinaemia is rare and there are no predisposing illnesses here. Rheumatoid arthritis (RA) is not a complement-consuming condition and would not cause renal involvement at such an early stage; rheumatoid factor is not a diagnostic test or a specific test for RA.

Question 39

A 64-year-old man presented with increasing pain in his right elbow and tingling in the medial aspect of his right hand. His job involved using a sledgehammer.

Examination was normal.

What is the most likely diagnosis?

- A: C6 radiculopathy ○
- B: compartment syndrome of the forearm ○
- C: lateral epicondylitis ○
- D: median nerve entrapment ○
- E: ulnar nerve entrapment ○

Question 39
Next Question

Question 39

No Answer Given

Incorrect

A 64-year-old man presented with increasing pain in his right elbow and tingling in the medial aspect of his right hand. His job involved using a sledgehammer.

Examination was normal.

What is the most likely diagnosis?

Answers

A: C6 radiculopathy
B: compartment syndrome of the forearm
C: lateral epicondylitis
D: median nerve entrapment
E: ulnar nerve entrapment

Correct answer: E

Explanation

The distribution of the tingling would suggest an ulnar nerve lesion. The ulnar nerve is commonly entrapped at the elbow (medial epicondyle) and can be exacerbated by repetitive or prolonged use of the elbow, as in this man.

Question 40

A 75-year-old woman presented with a 6-month history of an ulcer over the right ankle. She had a history of right deep venous thrombosis 5 years previously.

On examination, she had a superficial sloughing ulcer, 6 cm in diameter, over the medial malleolus.

What is the most appropriate investigation?

A: ankle–brachial pressure index ○

B: bacteriological swab of the ulcer ○

C: bilateral lower limb arteriography ○

D: right leg venography ○

E: venous duplex ultrasound scan ○

Question 40

Next Question

Question 40

No Answer Given

Incorrect

A 75-year-old woman presented with a 6-month history of an ulcer over the right ankle. She had a history of right deep venous thrombosis 5 years previously.

On examination, she had a superficial sloughing ulcer, 6 cm in diameter, over the medial malleolus.

What is the most appropriate investigation?

Answers

A: ankle–brachial pressure index
B: bacteriological swab of the ulcer
C: bilateral lower limb arteriography
D: right leg venography
E: venous duplex ultrasound scan

Correct answer: A

Explanation

This is a case of venous ulceration, and the information that indicates this is:

(i) the history of a deep venous thrombosis of the same leg some years previously, which will have damaged the valves in the veins,
(ii) the site of the ulcer, over the ankle/medial malleolus, and
(iii) the superficial nature of the ulcer.

Treatment for venous ulceration is with a compression bandage, which allows the leg muscles to pump the blood back to the heart when the patient walks because contracting the calf muscles presses against the compression bandage and squeezes the blood up along the vein. However, compression is contraindicated if there is insufficient arterial supply to the foot, because, in that case, the compression could lead to lower limb ischaemia, so it is important to check blood flow into the leg before prescribing compression bandages. Although one can feel for a pulse (dorsalis pedis or posterior tibialis), this is not as accurate as doing an ankle–brachial pressure index (option A), which is therefore the correct answer.

Question 41

A 50-year-old woman presented with a 6-month history of diarrhoea and weight loss of 5 kg. She described her stools as pale and bulky. She had a history of Raynaud's phenomenon.

On examination, the skin over her fingers was shiny and tight.

What is the most likely cause of her diarrhoea?

A: bacterial overgrowth ○

B: gluten sensitivity ○

C: lactose intolerance ○

D: microscopic colitis ○

E: pancreatic insufficiency ○

Question 41

No Answer Given

Incorrect

A 50-year-old woman presented with a 6-month history of diarrhoea and weight loss of 5 kg. She described her stools as pale and bulky. She had a history of Raynaud’s phenomenon.

On examination, the skin over her fingers was shiny and tight.

What is the most likely cause of her diarrhoea?

Answers

A: bacterial overgrowth
B: gluten sensitivity
C: lactose intolerance
D: microscopic colitis
E: pancreatic insufficiency

Correct answer: A

Explanation

This patient has Raynaud’s phenomenon and skin changes consistent with systemic sclerosis. She has developed small intestinal bacterial overgrowth, which is a common complication in systemic sclerosis, occurring in up to 40% of patients. Systemic sclerosis affects the small intestine, causing reduced peristalsis and small bowel dilatation, resulting in alterations in the small bowel bacterial flora. Features include loose stools, steatorrhoea, malabsorption, abdominal discomfort and flatulence.

The other options would not be expected to be associated with skin thickening and Raynaud’s phenomenon.

Question 42

A 55-year-old man presented with a 12-month history of increasing breathlessness.

On examination, he had finger clubbing, and widespread end-inspiratory fine crackles on chest auscultation.

Investigations:

chest X-ray	diffuse lung shadowing

What pulmonary function test result would be most characteristic of a diagnosis of idiopathic pulmonary fibrosis?

- A: FEV_1/FVC ratio 0.6 ○
- B: peak flow 50% of predicted value ○
- C: residual volume 110% of predicted value ○
- D: total lung capacity 95% of predicted value ○
- E: transfer factor for CO 50% of predicted value ○

Question 42

No Answer Given

Incorrect

A 55-year-old man presented with a 12-month history of increasing breathlessness.

On examination, he had finger clubbing, and widespread end-inspiratory fine crackles on chest auscultation.

Investigations:

chest X-ray	diffuse lung shadowing

What pulmonary function test result would be most characteristic of a diagnosis of idiopathic pulmonary fibrosis?

Answers

A: FEV_1/FVC ratio 0.6
B: peak flow 50% of predicted value
C: residual volume 110% of predicted value
D: total lung capacity 95% of predicted value
E: transfer factor for CO 50% of predicted value

Correct answer: E

Explanation

This patient has pulmonary fibrosis, probably usual interstitial pneumonitis (UIP). The clinical presentation is typical. The most important and useful measurement is the diffusing capacity/transfer factor which is a measure of how effectively oxygen diffuses from the alveolus into the bloodstream. Transfer factor for CO is used to determine the severity of the fibrosis and can be used to monitor progression of disease. The other measurements are less useful.

Question 43

A 42-year-old man was found to have abnormal liver function tests. He had had ulcerative colitis for 15 years and was in remission. He was taking mesalazine.

Investigations:

serum albumin	40 g/L (37–49)
serum total bilirubin	15 μmol/L (1–22)
serum alanine aminotransferase	63 U/L (5–35)
serum aspartate aminotransferase	41 U/L (1–31)
serum alkaline phosphatase	741 U/L (45–105)
serum gamma glutamyl transferase	221 U/L (<50)

What is the most likely cause of these blood results?

A: autoimmune hepatitis ○

B: fatty liver ○

C: liver metastases ○

D: primary biliary cholangitis ○

E: primary sclerosing cholangitis ○

Question 43

Next Question

Question 43

No Answer Given

Incorrect

A 42-year-old man was found to have abnormal liver function tests. He had had ulcerative colitis for 15 years and was in remission. He was taking mesalazine.

Investigations:

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serum total bilirubin	15 µmol/L (1–22)
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serum alkaline phosphatase	741 U/L (45–105)
serum gamma glutamyl transferase	221 U/L (<50)

What is the most likely cause of these blood results?

Answers

A: autoimmune hepatitis
B: fatty liver
C: liver metastases
D: primary biliary cholangitis
E: primary sclerosing cholangitis

Correct answer: E

Explanation

The pattern of derangement of liver function tests is suggestive of a cholestatic disorder such as primary sclerosing cholangitis, which is recognised to occur in up to 10% of ulcerative colitis patients. Primary biliary cholangitis is not directly linked with ulcerative colitis; autoimmune hepatitis is a possibility but the pattern of liver function tests is less suggestive and there is limited association with ulcerative colitis. Fatty liver is possible but the pattern of liver function tests makes it less likely. Metastases are also possible but there is nothing to suggest that in the history and it is less likely than primary sclerosing cholangitis in a 42-year-old man.

Question 44

A 65-year-old man presented with gradually worsening exertional angina, and underwent percutaneous coronary intervention with a drug-eluting stent. He was advised to take clopidogrel in addition to aspirin, atenolol and atorvastatin.

What is the predominant mechanism by which clopidogrel inhibits platelet aggregation?

A: it enhances the effect of circulating antithrombin ○

B: it inhibits binding of adenosine diphosphate ○

C: it inhibits cyclo-oxygenase-1 ○

D: it irreversibly binds glycoprotein IIb/IIIa receptor sites ○

E: it prevents production of thromboxane A2 ○

Question 44 ⌄

Next Question

Question 44

No Answer Given

Incorrect

A 65-year-old man presented with gradually worsening exertional angina, and underwent percutaneous coronary intervention with a drug-eluting stent. He was advised to take clopidogrel in addition to aspirin, atenolol and atorvastatin.

What is the predominant mechanism by which clopidogrel inhibits platelet aggregation?

Answers

A: it enhances the effect of circulating antithrombin
B: it inhibits binding of adenosine diphosphate
C: it inhibits cyclo-oxygenase-1
D: it irreversibly binds glycoprotein IIb/IIIa receptor sites
E: it prevents production of thromboxane A2

Correct answer: B

Explanation

Option B (it inhibits binding of adenosine diphosphate) is the best answer. Clopidogrel irreversibly inhibits platelet aggregation via P2Y12 class ADP receptors.

Heparin enhances the activity of circulating antithrombin.

Aspirin inhibits production of thromboxane A2, through COX-1 inhibition; aspirin is a weakly selective COX-1 inhibitor.

Several drugs bind glycoprotein IIb/IIIa receptor sites on platelets, thereby preventing aggregation – abciximab has high affinity.

Question 45

A 45-year-old man presented with recurrent epistaxis.

On examination, there were telangiectases on his lips and in his mouth.

A diagnosis of hereditary haemorrhagic telangiectasia was made.

What is the most likely mode of inheritance?

- A: autosomal dominant ○
- B: autosomal recessive ○
- C: mitochondrial inheritance ○
- D: sporadic mutation ○
- E: X-linked recessive ○

Question 45
Next Question

Question 45

No Answer Given

Incorrect

A 45-year-old man presented with recurrent epistaxis.

On examination, there were telangiectases on his lips and in his mouth.

A diagnosis of hereditary haemorrhagic telangiectasia was made.

What is the most likely mode of inheritance?

Answers

A: autosomal dominant
B: autosomal recessive
C: mitochondrial inheritance
D: sporadic mutation
E: X-linked recessive

Correct answer: A

Explanation

This condition is also known as Osler–Weber–Rendu syndrome and is inherited in an autosomal dominant fashion.

Question 46

A 50-year-old man presented with a 24-hour history of agitation, confusion and suicidal thoughts. He had started VAD chemotherapy (vincristine, doxorubicin and dexamethasone) 4 days previously, following a diagnosis of multiple myeloma.

What is the most likely cause of his symptoms?

A: adjustment disorder ○

B: confusion secondary to sepsis ○

C: corticosteroid psychosis ○

D: reactive depression ○

E: vincristine encephalopathy ○

Question 46 ⌄

Next Question

Question 46

No Answer Given

Incorrect

A 50-year-old man presented with a 24-hour history of agitation, confusion and suicidal thoughts. He had started VAD chemotherapy (vincristine, doxorubicin and dexamethasone) 4 days previously, following a diagnosis of multiple myeloma.

What is the most likely cause of his symptoms?

Answers

A: adjustment disorder
B: confusion secondary to sepsis
C: corticosteroid psychosis
D: reactive depression
E: vincristine encephalopathy

Correct answer: C

Explanation

Abrupt onset after chemotherapy and the finding of confusion would be unusual for adjustment disorder and depression. Vincristine causes encephalopathy if given intrathecally by mistake. Sepsis is a possibility but there is nothing else to suggest this in the stem. The finding of agitation and use of dexamethasone indicate that corticosteroid psychosis is most likely and it is relatively common clinically.

Question 47

A 45-year-old man presented with a 1-month history of foot drop.

What feature most strongly favours an L5 radiculopathy over a peroneal nerve palsy?

- A: complete paralysis of extensor hallucis longus ○
- B: loss of sensation confined to the lower calf ○
- C: positive Tinel's sign lateral to the knee ○
- D: weakness of ankle eversion ○
- E: weakness of ankle inversion ○

Question 47
Next Question

Question 47

No Answer Given

Incorrect

A 45-year-old man presented with a 1-month history of foot drop.

What feature most strongly favours an L5 radiculopathy over a peroneal nerve palsy?

Answers

A: complete paralysis of extensor hallucis longus
B: loss of sensation confined to the lower calf
C: positive Tinel’s sign lateral to the knee
D: weakness of ankle eversion
E: weakness of ankle inversion

Correct answer: E

Explanation

Weakness of inversion is not seen in common peroneal nerve lesion but may be present with L5 lesion (tibialis posterior muscle is supplied by tibial nerve, L4/5). Tinel’s is a weak sign with low positive predictive value.

Question 48

A 21-year-old man presented after a truamatic hemisection of his spinal cord at T10 level.

What is most likely to be present below the level of the lesion 2 months after the injury?

A: contralateral gross wasting ○

B: contralateral loss of pain and temperature sensation ○

C: contralateral loss of proprioception ○

D: contralateral upper motor neurone weakness ○

E: ipsilateral gross wasting ○

Question 48

No Answer Given

Incorrect

A 21-year-old man presented after a truamatic hemisection of his spinal cord at T10 level.

What is most likely to be present below the level of the lesion 2 months after the injury?

Answers

A: contralateral gross wasting
B: contralateral loss of pain and temperature sensation
C: contralateral loss of proprioception
D: contralateral upper motor neurone weakness
E: ipsilateral gross wasting

Correct answer: B

Explanation

Answering this question requires understanding of spinal cord anatomy. Since pain and temperature fibres (spinothalamic) cross at or above the level they enter the spinal cord, hemisection of the cord causes contralateral loss of pain and temperature sensation below the lesion. This is a feature of the Brown–Séquard syndrome. It is too early to see disuse atrophy. Weakness and proprioception would be ipsilateral, not contralateral features.

Question 49

A healthy 19-year-old medical student was asked to perform a Valsalva manoeuvre (forced expiration against a closed glottis) for demonstration purposes in a physiology class.

What is the most likely initial haemodynamic response?

- A: decreased JVP ○
- B: decreased systolic BP ○
- C: decreased venous return to the heart ○
- D: increased cardiac output ○
- E: increased pulse ○

Question 49 ⌄ Next Question

Question 49

No Answer Given

Incorrect

A healthy 19-year-old medical student was asked to perform a Valsalva manoeuvre (forced expiration against a closed glottis) for demonstration purposes in a physiology class.

What is the most likely initial haemodynamic response?

Answers

A: decreased JVP
B: decreased systolic BP
C: decreased venous return to the heart
D: increased cardiac output
E: increased pulse

Correct answer: C

Explanation

Increased intrathoracic pressure shifts blood from the pulmonary circulation to the left atrium, and also causes reduced systemic return to the right side of the heart. JVP will increase initially and cardiac output drops. Heart rate, and therefore pulse, drops during phase 1 of Valsalva manoeuvre.

Question 50

A 47-year-old woman was being treated with lithium for bipolar affective disorder.

On examination, her BP was 168/104 mmHg.

What is the most appropriate antihypertensive drug for her?

A: amlodipine ○

B: doxazosin ○

C: indapamide ○

D: losartan ○

E: ramipril ○

Question 50 ⌄

Next Question

Question 50

No Answer Given

Incorrect

A 47-year-old woman was being treated with lithium for bipolar affective disorder.

On examination, her BP was 168/104 mmHg.

What is the most appropriate antihypertensive drug for her?

Answers

A: amlodipine
B: doxazosin
C: indapamide
D: losartan
E: ramipril

Correct answer: A

Explanation

Although NICE guidelines recommend an ACE inhibitor as first-line treatment in patients under 55, amlodipine is the preferred choice as it does not cause a significant increase in serum lithium concentration. ACE inhibitors, angiotensin II receptor antagonists and thiazide diuretics can all cause lithium toxicity by reducing renal lithium clearance.

Question 51

In a large prospective trial of a statin in patients with angina, 1000 patients were treated with a statin and 1000 with a placebo. A total of 150 patients taking the placebo experienced a cardiovascular event, compared with 100 taking the active drug.

	placebo	statin	total
cardiovascular event	150	100	250
no cardiovascular event	850	900	1750

What is the number-needed-to-treat (NNT) to prevent one cardiovascular event?

- A: 2.5 (250/100) ○
- B: 5 (250/50) ○
- C: 10 (1000/100) ○
- D: 20 (1000/50) ○
- E: 40 (2000/50) ○

Question 51

No Answer Given

Incorrect

In a large prospective trial of a statin in patients with angina, 1000 patients were treated with a statin and 1000 with a placebo. A total of 150 patients taking the placebo experienced a cardiovascular event, compared with 100 taking the active drug.

	placebo	statin	total
cardiovascular event	150	100	250
no cardiovascular event	850	900	1750

What is the number-needed-to-treat (NNT) to prevent one cardiovascular event?

Answers

A: 2.5 (250/100)
B: 5 (250/50)
C: 10 (1000/100)
D: 20 (1000/50)
E: 40 (2000/50)

Correct answer: D

Explanation

50 extra events occurred in the placebo arm of 1000 people, so 1000 must be treated to prevent 50 events. Therefore, 20 people are treated for every 1 event prevented, or NNT=20.

Question 52

A 37-year-old woman with a history of depression was brought to hospital having been found in a state of collapse. She had written a suicide note, and had an empty bottle of amitriptyline in her jacket.

On examination, her pulse was 135 beats/min and her BP was 105/50 mmHg.

Investigations:

serum potassium	4.5 mmol/L (3.5–4.9)
serum bicarbonate	18 mmol/L (20–28)
serum urea	8.5 mmol/L (2.5–7.0)
serum creatinine	110 μmol/L (60–110)
ECG	sinus tachycardia; QRS duration 135 ms (80–120); bursts of non-sustained ventricular tachycardia

What is the most appropriate initial intravenous treatment?

A: amiodarone ○

B: esmolol ○

C: magnesium ○

D: sodium bicarbonate ○

E: sodium chloride 0.9% ○

Question 52 ⌄

Next Question

Question 52

No Answer Given

Incorrect

A 37-year-old woman with a history of depression was brought to hospital having been found in a state of collapse. She had written a suicide note, and had an empty bottle of amitriptyline in her jacket.

On examination, her pulse was 135 beats/min and her BP was 105/50 mmHg.

Investigations:

serum potassium	4.5 mmol/L (3.5–4.9)
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serum urea	8.5 mmol/L (2.5–7.0)
serum creatinine	110 µmol/L (60–110)
ECG	sinus tachycardia; QRS duration 135 ms (80–120); bursts of non-sustained ventricular tachycardia

What is the most appropriate initial intravenous treatment?

Answers

A: amiodarone
B: esmolol
C: magnesium
D: sodium bicarbonate
E: sodium chloride 0.9%

Correct answer: D

Explanation

Treatment of complications of tricyclic poisoning (hypotension and arrhythmias) consists of correction of metabolic acidosis with sodium bicarbonate. Serum alkalinisation reduces binding of tricyclic antidepressants to the myocardium.

Question 53

A 20-year-old man was found collapsed.

On examination, he had a GCS of 6. His pulse was 60 beats/min, his BP was 90/60 mmHg, and is respiratory rate was 8 breaths/min. His muscle tone was reduced, his pupils were small but reacting and his plantar responses were downgoing.

What is the most likely cause of this presentation?

A: diazepam ○

B: dihydrocodeine ○

C: diphenhydramine ○

D: MDMA ('ecstasy') ○

E: methanol ○

Question 53 ⌄

Next Question

Question 53

No Answer Given

Incorrect

A 20-year-old man was found collapsed.

On examination, he had a GCS of 6. His pulse was 60 beats/min, his BP was 90/60 mmHg, and is respiratory rate was 8 breaths/min. His muscle tone was reduced, his pupils were small but reacting and his plantar responses were downgoing.

What is the most likely cause of this presentation?

Answers

A: diazepam
B: dihydrocodeine
C: diphenhydramine
D: MDMA ('ecstasy')
E: methanol

Correct answer: B

Explanation

The combination of reduced conscious level, reduced respiratory rate and small pupils (miosis) is a classic triad for the opioid toxidrome.

Question 54

On removal of the renal arterial clamp following a donor kidney transplantation, the surgeon noted changes suggestive of hyperacute rejection.

Which immunoglobulin is most likely to be responsible?

A: IgA ○

B: IgD ○

C: IgE ○

D: IgG ○

E: IgM ○

Question 54 ⌄

Next Question

Question 54

No Answer Given

Incorrect

On removal of the renal arterial clamp following a donor kidney transplantation, the surgeon noted changes suggestive of hyperacute rejection.

Which immunoglobulin is most likely to be responsible?

Answers

A: IgA
B: IgD
C: IgE
D: IgG
E: IgM

Correct answer: D

Explanation

Hyperacute rejection occurs because of pre-existing humoral immunity, which is IgG mediated.

Question 55

A 25-year-old woman presented with increasingly severe headache and two generalised seizures, 36 hours after the normal vaginal delivery of her first baby at 40 weeks' gestation. She had been treated with epidural analgesia during labour.

On examination, her temperature was 37.6°C, she was drowsy, there was a mild left hemiparesis and both plantar responses were extensor.

What is the most likely diagnosis?

A: bacterial meningitis ○

B: eclampsia ○

C: subarachnoid haemorrhage ○

D: venous sinus thrombosis ○

E: viral encephalitis ○

Question 55 ⌄

Next Question

Question 55

No Answer Given

Incorrect

A 25-year-old woman presented with increasingly severe headache and two generalised seizures, 36 hours after the normal vaginal delivery of her first baby at 40 weeks’ gestation. She had been treated with epidural analgesia during labour.

On examination, her temperature was 37.6°C, she was drowsy, there was a mild left hemiparesis and both plantar responses were extensor.

What is the most likely diagnosis?

Answers

A: bacterial meningitis
B: eclampsia
C: subarachnoid haemorrhage
D: venous sinus thrombosis
E: viral encephalitis

Correct answer: D

Explanation

The combination of headache, increasing drowsiness (suggesting increasing intracranial pressure), focal neurological signs and seizures in a woman shortly post partum is highly suggestive of a venous sinus thrombosis. None of the other options is impossible, but central venous sinus thrombosis is the first diagnosis to consider and investigate.

Question 56

The half-life of a novel anti-obesity drug exhibiting first-order kinetics was calculated to be 4 hours.

What percentage of the drug will be eliminated 20 hours after ingestion of a single dose?

A: 75% ○

B: 80% ○

C: 90% ○

D: 97% ○

E: 100% ○

Question 56 ⌄

Next Question

Question 56

No Answer Given

Incorrect

The half-life of a novel anti-obesity drug exhibiting first-order kinetics was calculated to be 4 hours.

What percentage of the drug will be eliminated 20 hours after ingestion of a single dose?

Answers

A: 75%
B: 80%
C: 90%
D: 97%
E: 100%

Correct answer: D

Explanation

After five half-lives, 97% of the drug will have been eliminated (50%+25%+12.5%+6.25%+3.125%)

Question 57

A 16-year-old boy with type 1 diabetes mellitus was treated with a biphasic insulin preparation but achievement of good blood glucose control proved difficult. He was offered treatment with the insulin analogue, insulin lispro.

Which characteristic of insulin lispro might improve his glycaemic control?

- A: low incidence of hypoglycaemia ○
- B: low incidence of lipoatrophy at the injection site ○
- C: low risk of immunogenic reaction ○
- D: rapid onset of action ○
- E: small injection volume ○

Question 57 ⌄

Next Question

Question 57

No Answer Given

Incorrect

A 16-year-old boy with type 1 diabetes mellitus was treated with a biphasic insulin preparation but achievement of good blood glucose control proved difficult. He was offered treatment with the insulin analogue, insulin lispro.

Which characteristic of insulin lispro might improve his glycaemic control?

Answers

A: low incidence of hypoglycaemia
B: low incidence of lipoatrophy at the injection site
C: low risk of immunogenic reaction
D: rapid onset of action
E: small injection volume

Correct answer: D

Explanation

Insulin lispro is a rapid-acting human insulin analogue and leads to lower post-prandial glucose concentrations than biphasic insulin.

Question 58

A 74-year-old woman presented with distressing restlessness in her legs, particularly at night. She usually had to get out of bed several times to reduce her symptoms, and her sleep was being disturbed.

What is the most appropriate treatment?

A: clonazepam ○

B: co-beneldopa ○

C: propranolol ○

D: quinine ○

E: ropinirole ○

Question 58
Next Question

Question 58

No Answer Given

Incorrect

A 74-year-old woman presented with distressing restlessness in her legs, particularly at night. She usually had to get out of bed several times to reduce her symptoms, and her sleep was being disturbed.

What is the most appropriate treatment?

Answers

A: clonazepam
B: co-beneldopa
C: propranolol
D: quinine
E: ropinirole

Correct answer: E

Explanation

The dopamine agonists ropinirole, pramipexole and rotigotine may be used for the treatment of moderate to severe restless legs syndrome.

Question 59

A 32-year-old man was treated with combination chemotherapy for testicular cancer.

Subsequent investigations confirmed a complete clinical remission.

What is the dominant cellular process that explains why this therapy was successful?

- A: apoptosis ○
- B: differentiation ○
- C: mutagenesis ○
- D: necrosis ○
- E: senescence ○

Question 59
Next Question

Question 59

No Answer Given

Incorrect

A 32-year-old man was treated with combination chemotherapy for testicular cancer.

Subsequent investigations confirmed a complete clinical remission.

What is the dominant cellular process that explains why this therapy was successful?

Answers

A: apoptosis
B: differentiation
C: mutagenesis
D: necrosis
E: senescence

Correct answer: A

Explanation

Apoptosis, programmed cell death, is the only mechanism that would precipitate cure without unacceptable adverse effect. Differentiation, mutagenesis and senescence do not cause cell death, whereas necrosis causes premature cell death by autolysis and has adverse clinical effects.

Question 60

In a large multicentre clinical trial to assess the effectiveness of a new antihypertensive drug, subjects were randomised to be treated with either the new drug or an existing standard antihypertensive drug. The main outcome criterion was the blood pressure after 2 months of treatment.

What is the most appropriate statistical technique to compare mean BP between the groups?

A: chi-squared test ○

B: Mann–Whitney U test ○

C: Pearson correlation coefficient ○

D: regression analysis ○

E: two-sample t-test ○

Question 60

No Answer Given

Incorrect

In a large multicentre clinical trial to assess the effectiveness of a new antihypertensive drug, subjects were randomised to be treated with either the new drug or an existing standard antihypertensive drug. The main outcome criterion was the blood pressure after 2 months of treatment.

What is the most appropriate statistical technique to compare mean BP between the groups?

Answers

A: chi-squared test
B: Mann–Whitney U test
C: Pearson correlation coefficient
D: regression analysis
E: two-sample t-test

Correct answer: E

Explanation

The study is classed as “large” so a parametric test is acceptable, and both groups are likely to have the same variance.

The two-sample t-test will compare the two sets of data better than Mann–Whitney U test.

Regression and correlation tests are not relevant. The chi-squared test is used for expected versus observed results.

Question 61

A 71-year-old woman presented with a 2-hour history of severe pain and loss of vision in her right eye. She had noticed halos around lights during the previous 24 hours.

On examination, there was ciliary vessel hyperaemia and a dilated unreactive pupil on the affected side.

What is the most likely diagnosis?

- A: anterior uveitis ○
- B: closed-angle glaucoma ○
- C: diffuse scleritis ○
- D: orbital cellulitis ○
- E: retinal artery occlusion ○

Question 61

No Answer Given

Incorrect

A 71-year-old woman presented with a 2-hour history of severe pain and loss of vision in her right eye. She had noticed halos around lights during the previous 24 hours.

On examination, there was ciliary vessel hyperaemia and a dilated unreactive pupil on the affected side.

What is the most likely diagnosis?

Answers

A: anterior uveitis
B: closed-angle glaucoma
C: diffuse scleritis
D: orbital cellulitis
E: retinal artery occlusion

Correct answer: B

Explanation

Acute closed-angle glaucoma is caused by a rapid or sudden increase in intraocular pressure. It can occur with rapid dilatation of the pupil, causing failure of fluid drainage through the anterior chamber of the eye. Symptoms include headaches, eye pain, nausea, halos and reduction of visual acuity. Ciliary vessel hyperaemia is an early sign.

Question 62

A 16-year-old boy presented 30 minutes after sustaining a head injury. His parents reported that he had fallen and hit the right side of his head on the ground. He had lost consciousness for a few seconds, then recovered fully.

On examination, he was fully conscious and had no focal neurological signs. Two hours later, his conscious level deteriorated.

What is the most likely diagnosis?

A: cerebral oedema ○

B: diffuse axonal injury ○

C: extradural haematoma ○

D: subarachnoid haemorrhage ○

E: subdural haematoma ○

Question 62

No Answer Given

Incorrect

A 16-year-old boy presented 30 minutes after sustaining a head injury. His parents reported that he had fallen and hit the right side of his head on the ground. He had lost consciousness for a few seconds, then recovered fully.

On examination, he was fully conscious and had no focal neurological signs. Two hours later, his conscious level deteriorated.

What is the most likely diagnosis?

Answers

A: cerebral oedema
B: diffuse axonal injury
C: extradural haematoma
D: subarachnoid haemorrhage
E: subdural haematoma

Correct answer: C

Explanation

The mechanism of injury and the description of the ‘lucid period’ is highly suggestive of an extradural haematoma. This type of injury is unlikely to lead to diffuse axonal injury and there would be no lucid period with this. Subdural haematoma is more common in older people.

Question 63

A 55-year-old woman presented with a 2-day history of diplopia and progressive gait unsteadiness.

On examination, she had limited eye movements in all directions and her pupils were poorly reacting. Muscle power in the limbs was normal but tendon reflexes were absent. There was prominent bilateral finger–nose ataxia. Plantar responses were flexor. Sensation was normal.

What is the most likely diagnosis?

A: brainstem stroke ○

B: Miller Fisher syndrome ○

C: multiple sclerosis ○

D: myasthenia gravis ○

E: Wernicke encephalopathy ○

Question 63

No Answer Given

Incorrect

A 55-year-old woman presented with a 2-day history of diplopia and progressive gait unsteadiness.

On examination, she had limited eye movements in all directions and her pupils were poorly reacting. Muscle power in the limbs was normal but tendon reflexes were absent. There was prominent bilateral finger–nose ataxia. Plantar responses were flexor. Sensation was normal.

What is the most likely diagnosis?

Answers

A: brainstem stroke
B: Miller Fisher syndrome
C: multiple sclerosis
D: myasthenia gravis
E: Wernicke encephalopathy

Correct answer: B

Explanation

Miller Fisher syndrome is the triad of ataxia, internal and external ophthalmoplegia and areflexia. It is often associated with antibodies to GQ1b and is probably a variant of Guillain– Barré syndrome. The other answer options do not have the same combination of signs.

Question 64

A 58-year-old man with congestive heart failure remained oedematous despite treatment with furosemide 120 mg daily.

Investigations:

serum sodium	134 mmol/L (137–144)
serum potassium	3.4 mmol/L (3.5–4.9)
serum urea	10.6 mmol/L (2.5–7.0)
serum creatinine	156 μmol/L (60–110)

What other finding is most likely?

A: high plasma aldosterone concentration ○

B: high serum cortisol concentration ○

C: low plasma angiotensin II concentration ○

D: low plasma atrial natriuretic peptide concentration ○

E: low plasma renin concentration ○

Question 64

No Answer Given

Incorrect

A 58-year-old man with congestive heart failure remained oedematous despite treatment with furosemide 120 mg daily.

Investigations:

serum sodium	134 mmol/L (137–144)
serum potassium	3.4 mmol/L (3.5–4.9)
serum urea	10.6 mmol/L (2.5–7.0)
serum creatinine	156 µmol/L (60–110)

What other finding is most likely?

Answers

A: high plasma aldosterone concentration
B: high serum cortisol concentration
C: low plasma angiotensin II concentration
D: low plasma atrial natriuretic peptide concentration
E: low plasma renin concentration

Correct answer: A

Explanation

In congestive cardiac failure, there is pathophysiological activation of the renin angiotensin aldosterone system due to reduced renal perfusion pressure, which is identified within the nephron by the juxtaglomerular apparatus. This leads to elevated levels of these hormones. Serum cortisol levels are not usually significantly elevated in congestive cardiac failure. Atrial natriuretic peptide would be elevated in congestive cardiac failure in response to increased atrial blood volume and atrial wall stretch. Option A is therefore the correct answer.

Question 65

A 34-year-old woman, who was 14 weeks pregnant, had a 6-year history of Sjögren’s syndrome.

What autoantibody in this condition is most strongly associated with an increased risk of congenital heart block in the fetus?

- A: ANCA ○
- B: anticardiolipin ○
- C: anticentromere ○
- D: anti-La ○
- E: anti-Ro ○

Question 65
Next Question

Question 65

No Answer Given

Incorrect

A 34-year-old woman, who was 14 weeks pregnant, had a 6-year history of Sjögren’s syndrome.

What autoantibody in this condition is most strongly associated with an increased risk of congenital heart block in the fetus?

Answers

A: ANCA
B: anticardiolipin
C: anticentromere
D: anti-La
E: anti-Ro

Correct answer: E

Explanation

This question tests the knowledge of transplacental transfer of antibodies and consequences on the fetus. Both anti-Ro and anti-La antibodies can be involved, but it is more common with anti-Ro antibodies. Both antibodies are associated with neonatal lupus for the same reason.

Question 66

A 72-year-old man presented with a 2-day history of pain and swelling of the right knee.

Analysis of synovial fluid from the right knee confirmed the presence of calcium pyrophosphate crystals.

What is the microscopic appearance of these crystals?

A: needle-shaped with negative birefringence ○

B: needle-shaped with no birefringence ○

C: needle-shaped with positive birefringence ○

D: rhomboid with negative birefringence ○

E: rhomboid with positive birefringence ○

Question 66

No Answer Given

Incorrect

A 72-year-old man presented with a 2-day history of pain and swelling of the right knee.

Analysis of synovial fluid from the right knee confirmed the presence of calcium pyrophosphate crystals.

What is the microscopic appearance of these crystals?

Answers

A: needle-shaped with negative birefringence
B: needle-shaped with no birefringence
C: needle-shaped with positive birefringence
D: rhomboid with negative birefringence
E: rhomboid with positive birefringence

Correct answer: E

Explanation

Calcium pyrophosphate crystals cause pseudogout, and are seen on microscopy as positively birefringent rhomboid crystals. Gout crystals are needle-shaped with negative birefringence.

Question 67

A 70-year-old man presented with a 2-week history of persistent fever. Six weeks previously, he had undergone colonoscopy and biopsy for a suspected carcinoma of the colon, and was awaiting surgery. He had a history of moderate mitral regurgitation caused by mitral valve prolapse.

Investigations:

echocardiogram	a vegetation on the anterior leaflet of the mitral valve

What is the most likely causative organism?

A: Bartonella henselae ○

B: coagulase-negative streptococci ○

C: Staphylococcus aureus ○

D: Streptococcus gallolyticus (S. bovis) ○

E: Yersinia enterocolitica ○

Question 67

No Answer Given

Incorrect

A 70-year-old man presented with a 2-week history of persistent fever. Six weeks previously, he had undergone colonoscopy and biopsy for a suspected carcinoma of the colon, and was awaiting surgery. He had a history of moderate mitral regurgitation caused by mitral valve prolapse.

Investigations:

echocardiogram	a vegetation on the anterior leaflet of the mitral valve

What is the most likely causative organism?

Answers

A: Bartonella henselae
B: coagulase-negative streptococci
C: Staphylococcus aureus
D: Streptococcus gallolyticus (S. bovis)
E: Yersinia enterocolitica

Correct answer: D

Explanation

Streptococcus gallolyticus (S. bovis) is the best answer. S. gallolyticus endocarditis is classically associated with colonic carcinoma and adenoma, and also with chronic liver disease.

Bartonella henselae causes cat scratch fever, and most patients with this uncommon form of endocarditis will have had exposure to cats.

Staphylococcus aureus is an increasingly common cause of endocarditis, often seen in patients with early endocarditis following heart valve surgery, as well as in patients with a history of intravenous drug use, or with indwelling cannulae such as dialysis lines.

Coagulase-negative streptococcal endocarditis is the commonest cause of native valve endocarditis but is a less likely cause than S. gallolyticus in this scenario.

Yersinia enterocolitica endocarditis is rare in comparison with the other options.

Question 68

A 75-year-old woman presented with a 2-month history of generalised malaise and headaches that had disturbed her sleep. For the past 24 hours, she had been unable to see with her right eye. She had a history of glaucoma and was using regular timolol eye drops.

On examination of the fundus, there was a swollen, pale right optic disc and a normal left optic disc.

What is the most likely diagnosis?

A: central retinal vein occlusion ○

B: closed-angle glaucoma ○

C: giant cell arteritis ○

D: optic neuritis ○

E: raised intracranial pressure ○

Question 68

No Answer Given

Incorrect

A 75-year-old woman presented with a 2-month history of generalised malaise and headaches that had disturbed her sleep. For the past 24 hours, she had been unable to see with her right eye. She had a history of glaucoma and was using regular timolol eye drops.

On examination of the fundus, there was a swollen, pale right optic disc and a normal left optic disc.

What is the most likely diagnosis?

Answers

A: central retinal vein occlusion
B: closed-angle glaucoma
C: giant cell arteritis
D: optic neuritis
E: raised intracranial pressure

Correct answer: C

Explanation

The clinical picture suggests a right ischaemic optic neuropathy. The pain and malaise in someone of this age would be highly suggestive of an arteritic process and giant cell arteritis should be suspected in all cases presenting in this manner.

Question 69

A 66-year-old man, who was undergoing maintenance haemodialysis through a subcutaneous tunnelled catheter, presented with fever, chills and rigors during haemodialysis.

On examination, his temperature was 38.6°C, his pulse was 105 beats/min and his BP was 100/60 mmHg. Examination of his respiratory and cardiovascular systems was normal.

What is the most likely cause of his infection?

- A: coagulase-negative streptococci ○
- B: Escherichia coli ○
- C: Pseudomonas aeruginosa ○
- D: Staphylococcus epidermidis ○
- E: Streptococcus pneumoniae ○

Question 69

No Answer Given

Incorrect

A 66-year-old man, who was undergoing maintenance haemodialysis through a subcutaneous tunnelled catheter, presented with fever, chills and rigors during haemodialysis.

On examination, his temperature was 38.6°C, his pulse was 105 beats/min and his BP was 100/60 mmHg. Examination of his respiratory and cardiovascular systems was normal.

What is the most likely cause of his infection?

Answers

A: coagulase-negative streptococci
B: Escherichia coli
C: Pseudomonas aeruginosa
D: Staphylococcus epidermidis
E: Streptococcus pneumoniae

Correct answer: D

Explanation

Staphylococcus epidermidis or coagulase-negative staphylococcal infections are common infections with vascular dialysis catheters. The other options are unusual.

Question 70

A 72-year-old woman with rheumatoid arthritis presented with dysuria, rigors and high fever of 2 days' duration. Her regular medication comprised methotrexate, prednisolone and paracetamol.

On examination, her temperature was 39.0°C and she was tender in both flanks. Her BMI was 34.0 kg/m^2 (18.0–25.0).

Investigations:

urine culture	coliforms, sensitive to ciprofloxacin

Which condition is most likely to be precipitated by the use of ciprofloxacin?

A: gastric ulceration ○

B: glucose intolerance ○

C: hepatitis ○

D: pneumonitis ○

E: tendinopathy ○

Question 70 ⌄

Next Question

Question 70

No Answer Given

Incorrect

A 72-year-old woman with rheumatoid arthritis presented with dysuria, rigors and high fever of 2 days' duration. Her regular medication comprised methotrexate, prednisolone and paracetamol.

On examination, her temperature was 39.0°C and she was tender in both flanks. Her BMI was 34.0 kg/m^2 (18.0–25.0).

Investigations:

urine culture	coliforms, sensitive to ciprofloxacin

Which condition is most likely to be precipitated by the use of ciprofloxacin?

Answers

A: gastric ulceration
B: glucose intolerance
C: hepatitis
D: pneumonitis
E: tendinopathy

Correct answer: E

Explanation

Tendon damage including rupture can occur rarely after use of quinolones. Quinolones are contraindicated in patients with a history of tendon disorders related to quinolone use.

Question 71

A 35-year-old woman presented with a 6-month history of episodes of sweating, joint pain and headaches.

On examination, her BP was 160/90 mmHg.

Investigations:

fasting plasma glucose	8.1 mmol/L (3.0–6.0)

A clinical diagnosis of acromegaly was suspected.

What additional investigation is most likely to confirm the diagnosis?

A: fasting growth hormone ○

B: growth hormone suppression test ○

C: insulin tolerance test ○

D: MR scan of pituitary gland ○

E: serum IGF-1 ○

Question 71

No Answer Given

Incorrect

A 35-year-old woman presented with a 6-month history of episodes of sweating, joint pain and headaches.

On examination, her BP was 160/90 mmHg.

Investigations:

fasting plasma glucose	8.1 mmol/L (3.0–6.0)

A clinical diagnosis of acromegaly was suspected.

What additional investigation is most likely to confirm the diagnosis?

Answers

A: fasting growth hormone
B: growth hormone suppression test
C: insulin tolerance test
D: MR scan of pituitary gland
E: serum IGF-1

Correct answer: B

Explanation

Failure of growth hormone levels to be suppressed on a growth hormone suppression test indicates excess production. Growth hormone is released in a pulsatile manner, therefore an isolated sample is not appropriate. IGF-1 levels are not diagnostic, insulin tolerance test assesses growth hormone deficiency and an MR scan of pituitary gland will not reveal growth hormone excess.

Question 72
Next Question

Question 72

A 25-year-old man presented with a 3-month history of hearing two people commenting on his actions. For the past 2 years, he had become increasingly withdrawn and had neglected his self-care. He had graduated from university at 21 years of age, but had never been employed and had few friends. He had taken an overdose of paracetamol 2 months previously. He had smoked cannabis regularly for 5 years. He drank 60 units of alcohol per week.

On examination, he made poor eye contact and his speech was disjointed.

What is the most likely diagnosis?

- A: alcohol-related hallucinosis ○
- B: borderline personality disorder ○
- C: cannabis-induced psychosis ○
- D: paranoid schizophrenia ○
- E: psychotic depression ○

Question 72

No Answer Given

Incorrect

A 25-year-old man presented with a 3-month history of hearing two people commenting on his actions. For the past 2 years, he had become increasingly withdrawn and had neglected his self-care. He had graduated from university at 21 years of age, but had never been employed and had few friends. He had taken an overdose of paracetamol 2 months previously. He had smoked cannabis regularly for 5 years. He drank 60 units of alcohol per week.

On examination, he made poor eye contact and his speech was disjointed.

What is the most likely diagnosis?

Answers

A: alcohol-related hallucinosis
B: borderline personality disorder
C: cannabis-induced psychosis
D: paranoid schizophrenia
E: psychotic depression

Correct answer: D

Explanation

Diagnosis of schizophrenia is supported by first-rank symptoms (voices discussing him), social withdrawal and neglect (negative symptoms) and the patient’s age and time course. Disjointed speech reflects thought disorder, also found in schizophrenia. Alcohol-related hallucinosis is rare and occurs after years of very heavy alcohol use. The finding of graduating from university and then declining is against any form of personality disorder, which would have been developing through childhood and adolescence. Psychotic depression is unlikely because there is evidence for schizophrenia and, in psychotic depression, voices tend to be very simple and elemental (noises or occasional words). While cannabis use is associated with schizophrenia, a pure cannabis-related psychosis would tend to be more acute and he has been using cannabis for 5 years.

Question 73

A 56-year-old man presented with double vision

On examination, he had bilateral partial ptosis, diplopia and truncal muscle weakness.

Investigations:

chest X-ray	widened mediastinum

What is the most likely diagnosis?

A: dermatomyositis ○

B: Lambert–Eaton myasthenic syndrome ○

C: malignant meningitis ○

D: mononeuritis multiplex ○

E: myasthenia gravis ○

Question 73
Next Question

Question 73

No Answer Given

Incorrect

A 56-year-old man presented with double vision

On examination, he had bilateral partial ptosis, diplopia and truncal muscle weakness.

Investigations:

chest X-ray	widened mediastinum

What is the most likely diagnosis?

Answers

A: dermatomyositis
B: Lambert–Eaton myasthenic syndrome
C: malignant meningitis
D: mononeuritis multiplex
E: myasthenia gravis

Correct answer: E

Explanation

The clinical presentation is entirely consistent with myasthenia gravis and the widened mediastinum would be consistent with thymoma, which is often associated with paraneoplastic myasthenia gravis

Question 74

A 63-year-old woman with a history of CREST syndrome developed progressive breathlessness.

On auscultation of the chest, she had bilateral basal crackles.

Investigations:

chest X-ray	lower-zone shadowing

What is the most likely diagnosis?

A: cryptogenic organising pneumonia ○

B: interstitial lung disease ○

C: left ventricular failure ○

D: progressive massive fibrosis ○

E: tuberculosis ○

Question 74

Next Question

Question 74

No Answer Given

Incorrect

A 63-year-old woman with a history of CREST syndrome developed progressive breathlessness.

On auscultation of the chest, she had bilateral basal crackles.

Investigations:

chest X-ray	lower-zone shadowing

What is the most likely diagnosis?

Answers

A: cryptogenic organising pneumonia
B: interstitial lung disease
C: left ventricular failure
D: progressive massive fibrosis
E: tuberculosis

Correct answer: B

Explanation

Patients with autoimmune disease develop interstitial lung disease, usually non-specific interstitial pneumonitis (NSIP). The other conditions are not associated with CREST syndrome, although immunosuppressed patients can develop cryptogenic organising pneumonia or get reactivation of tuberculosis.

Question 75

A 75-year-old woman with hypertension had been treated with bendroflumethiazide for the past 5 years.

On examination, her BP was 125/78 mmHg.

Investigations:

serum sodium	140 mmol/L (137–144)
serum potassium	3.2 mmol/L (3.5–4.9)
serum creatinine	67 μmol/L (60–110)

What is the most likely mechanism for the hypokalaemia?

A: increased loss in the distal tubule ○

B: increased potassium secretion in the proximal tubule ○

C: opening of potassium channels in the principal cells ○

D: reduced aldosterone secretion ○

E: reduced potassium reabsorption in the loop of Henle ○

Question 75 ⌄

Next Question

Question 75

No Answer Given

Incorrect

A 75-year-old woman with hypertension had been treated with bendroflumethiazide for the past 5 years.

On examination, her BP was 125/78 mmHg.

Investigations:

serum sodium	140 mmol/L (137–144)
serum potassium	3.2 mmol/L (3.5–4.9)
serum creatinine	67 µmol/L (60–110)

What is the most likely mechanism for the hypokalaemia?

Answers

A: increased loss in the distal tubule
B: increased potassium secretion in the proximal tubule
C: opening of potassium channels in the principal cells
D: reduced aldosterone secretion
E: reduced potassium reabsorption in the loop of Henle

Correct answer: A

Explanation

Thiazide diuretics act on the distal tubule by blocking the thiazide-sensitive Na^+-Cl^- symporter. The increased sodium delivery to the distal part of the distal tubule causes increased potassium loss, due to stimulation by sodium of the aldosterone-sensitive sodium pump, thereby enhancing sodium reabsorption in exchange for potassium (and hydrogen) ion.

Question 76

A 25-year-old injecting drug user presented with an injection-site abscess.

On examination, his temperature was 38.5°C and there was a pansystolic murmur.

What organism is most likely to be cultured from both the abscess and the blood?

A: Clostridium novyi ○

B: Klebsiella pneumoniae ○

C: Staphylococcus aureus ○

D: Staphylococcus epidermidis ○

E: Streptococcus anginosus (S. milleri group) ○

Question 76

No Answer Given

Incorrect

A 25-year-old injecting drug user presented with an injection-site abscess.

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What organism is most likely to be cultured from both the abscess and the blood?

Answers

A: Clostridium novyi
B: Klebsiella pneumoniae
C: Staphylococcus aureus
D: Staphylococcus epidermidis
E: Streptococcus anginosus (S. milleri group)

Correct answer: C

Explanation

A straightforward test of knowledge. The patient has an injection-site abscess and right-sided endocarditis. Staphylococcus aureus is the most likely cause of this presentation.

Question 77

A 30-year-old doctor presented following a needlestick injury sustained while treating a patient with recently diagnosed HIV infection. The patient was hepatitis C negative and had been vaccinated against hepatitis B virus, and was not taking any antiretroviral treatment.

What is the most appropriate post-exposure prophylaxis for the doctor?

A: single-drug antiretroviral treatment for 1 month ○

B: single-drug antiretroviral treatment for 3 months ○

C: three-drug antiretroviral treatment for 1 month ○

D: three-drug antiretroviral treatment for 3 months ○

E: two-drug antiretroviral treatment for 1 month ○

Question 77 ⌄

Next Question

Question 77

No Answer Given

Incorrect

A 30-year-old doctor presented following a needlestick injury sustained while treating a patient with recently diagnosed HIV infection. The patient was hepatitis C negative and had been vaccinated against hepatitis B virus, and was not taking any antiretroviral treatment.

What is the most appropriate post-exposure prophylaxis for the doctor?

Answers

A: single-drug antiretroviral treatment for 1 month
B: single-drug antiretroviral treatment for 3 months
C: three-drug antiretroviral treatment for 1 month
D: three-drug antiretroviral treatment for 3 months
E: two-drug antiretroviral treatment for 1 month

Correct answer: C

Explanation

Post-exposure prophylaxis (PEP) of HIV requires a three-drug antiretroviral regimen in the same way that treatment requires three drug regimens. All of the trials of PEP in needlestick injury have been done with 28 days of treatment and this is established practice.

Question 78

A 21-year-old woman, who was undergoing chemotherapy for non-Hodgkin lymphoma, presented 2 days after being in contact with her nephew, for 2 hours, on the day that he developed a chickenpox rash.

Investigations:

varicella serology	negative

What is the most appropriate management?

A: advise her to seek treatment if she develops a chickenpox rash ○

B: interrupt chemotherapy for 2 weeks ○

C: oral aciclovir 800 mg five times daily for 1 week ○

D: varicella immunisation ○

E: varicella zoster immunoglobulin ○

Question 78

No Answer Given

Incorrect

A 21-year-old woman, who was undergoing chemotherapy for non-Hodgkin lymphoma, presented 2 days after being in contact with her nephew, for 2 hours, on the day that he developed a chickenpox rash.

Investigations:

varicella serology	negative

What is the most appropriate management?

Answers

A: advise her to seek treatment if she develops a chickenpox rash
B: interrupt chemotherapy for 2 weeks
C: oral aciclovir 800 mg five times daily for 1 week
D: varicella immunisation
E: varicella zoster immunoglobulin

Correct answer: E

Explanation

Explanation: The patient is immunocompromised and, with negative varicella serology, is at risk of varicella infection. Varicella zoster immunoglobulin transfers passive immunity and reduces the risk of acquiring infection.

If she develops chickenpox, there is a high risk of an adverse outcome; therefore, management cannot wait until she develops chickenpox. Interrupting chemotherapy will make no difference to the outcome. Chickenpox in an immunocompromised host is always treated intravenously. Although oral aciclovir is sometimes recommended when there is a supply problem with varicella zoster immunoglobulin, it cannot prevent chickenpox. Varicella immunisation is contraindicated because it is a live vaccine at present.

Question 79

A 21-year-old woman presented with watery diarrhoea and cramping abdominal pain, 5 days after arriving in Mexico.

On examination, her temperature was 37.8°C and there was mild abdominal tenderness. There was some mucus in the stools, but no blood.

What is the most likely pathogen?

A: Aeromonas hydrophila ○

B: Entamoeba histolytica ○

C: enterotoxigenic Escherichia coli (ETEC) ○

D: Giardia intestinalis ○

E: rotavirus ○

Question 79

No Answer Given

Incorrect

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On examination, her temperature was 37.8°C and there was mild abdominal tenderness. There was some mucus in the stools, but no blood.

What is the most likely pathogen?

Answers

A: Aeromonas hydrophila
B: Entamoeba histolytica
C: enterotoxigenic Escherichia coli (ETEC)
D: Giardia intestinalis
E: rotavirus

Correct answer: C

Explanation

Bacteria are the most common cause of travellers' diarrhoea. Overall, the most common pathogen is enterotoxigenic Escherichia coli, followed by Campylobacter jejuni, Shigella spp., and Salmonella spp. Therefore, the answer is E. coli (enterotoxigenic) because it is the most likely cause of the presentation.

The other options can all cause diarrhoeal illness, although rotavirus would be unlikely in adults and Entamoeba histolytica would usually be bloody.

Question 80

A 36-year-old HIV-positive man presented with a 1-week history of generalised pruritus. He had had unprotected anal sex 2 months previously while on holiday in Spain. He had previously been vaccinated against hepatitis B virus, with an adequate antibody response.

On examination, his temperature was 37.8°C and he was jaundiced. Examination was otherwise normal.

Investigations:

serum total bilirubin	99 µmol/L (1–22)
serum aspartate aminotransferase	754 U/L (1–31)
serum alkaline phosphatase	173 U/L (45–105)

CD4 count	550 × 10^6/L (430–1690)

anti-hepatitis A IgM antibody	negative

What is the most likely diagnosis?

A: acute hepatitis C ○

B: acute hepatitis D ○

C: CMV infection ○

D: syphilis ○

E: toxoplasmosis ○

Question 80

No Answer Given

Incorrect

A 36-year-old HIV-positive man presented with a 1-week history of generalised pruritus. He had had unprotected anal sex 2 months previously while on holiday in Spain. He had previously been vaccinated against hepatitis B virus, with an adequate antibody response.

On examination, his temperature was 37.8°C and he was jaundiced. Examination was otherwise normal.

Investigations:

serum total bilirubin	99 μmol/L (1–22)
serum aspartate aminotransferase	754 U/L (1–31)
serum alkaline phosphatase	173 U/L (45–105)
CD4 count	550×10^6/L (430–1690)
anti-hepatitis A IgM antibody	negative

What is the most likely diagnosis?

Answers

A: acute hepatitis C
B: acute hepatitis D
C: CMV infection
D: syphilis
E: toxoplasmosis

Correct answer: A

Explanation

The patient has acute hepatitis. Hepatitis C is the most likely cause in a patient with HIV who has had unprotected anal sex. Hepatitis C is sexually transmitted in these circumstances. Hepatitis D is only clinically active when co-infected with hepatitis B.

CMV infection, syphilis and toxoplasmosis can all cause hepatitis but are less likely in this clinical context.

Question 81

Twenty-six passengers on a cruise ship returning from the Mediterranean to Southampton developed acute gastrointestinal illness over a period of 24 hours. All those affected had experienced persistent vomiting and watery diarrhoea.

What is the most likely causative agent?

A: Campylobacter jejuni ○

B: Escherichia coli O157:H7 ○

C: norovirus ○

D: rotavirus ○

E: Salmonella enteritidis ○

Question 81 ⌄

Next Question

Question 81

No Answer Given

Incorrect

Twenty-six passengers on a cruise ship returning from the Mediterranean to Southampton developed acute gastrointestinal illness over a period of 24 hours. All those affected had experienced persistent vomiting and watery diarrhoea.

What is the most likely causative agent?

Answers

A: Campylobacter jejuni
B: Escherichia coli O157:H7
C: norovirus
D: rotavirus
E: Salmonella enteritidis

Correct answer: C

Explanation

Norovirus is the most common cause of viral gastroenteritis. It is transmitted by faecally contaminated food or water, by person-to-person contact, and via aerosolisation of vomited virus and subsequent contamination of surfaces. Outbreaks in cruise ships are common.

Campylobacter jejuni, Escherichia coli O157:H7 and Salmonella enteritidis pass less easily from person to person and are less likely to cause an outbreak on a cruise ship. Rotavirus is most common in children.

Question 82
Next Question

Question 82

A 52-year-old man presented after having been found unconscious in the street.

On examination, he had a GCS of 5, a pulse of 110 beats/min and a BP of 95/65 mmHg. His respiratory rate was 35 breaths/min and there were no focal neurological signs.

Investigations:

arterial blood gases, breathing oxygen 40%:	
PO_2	11.5 kPa
PCO_2	3.9 kPa (4.7–6.0)
pH	7.24 (7.35–7.45)
H^+	58 nmol/L (35–45)
serum bicarbonate	12 mmol/L (21–29)

What acid–base disturbance is most likely to be present?

A: metabolic acidosis ○

B: mixed metabolic acidosis and metabolic alkalosis ○

C: mixed metabolic acidosis and respiratory acidosis ○

D: mixed respiratory alkalosis and metabolic acidosis ○

E: respiratory acidosis ○

Question 82

No Answer Given

Incorrect

A 52-year-old man presented after having been found unconscious in the street.

On examination, he had a GCS of 5, a pulse of 110 beats/min and a BP of 95/65 mmHg. His respiratory rate was 35 breaths/min and there were no focal neurological signs.

Investigations:

arterial blood gases, breathing oxygen 40%:	
PO_2	11.5 kPa
PCO_2	3.9 kPa (4.7–6.0)
pH	7.24 (7.35–7.45)
H^+	58 nmol/L (35–45)
serum bicarbonate	12 mmol/L (21–29)

What acid–base disturbance is most likely to be present?

Answers

A: metabolic acidosis
B: mixed metabolic acidosis and metabolic alkalosis
C: mixed metabolic acidosis and respiratory acidosis
D: mixed respiratory alkalosis and metabolic acidosis
E: respiratory acidosis

Correct answer: A

Explanation

The pH confirms this is an acidosis, and likely to be metabolic because of the very low bicarbonate. It is not respiratory acidosis as the PCO2 and bicarbonate are both low.

No history of chronic respiratory disease is given, so this is unlikely to be a significant contributor to the presenting complaint. There is no evidence of alkalosis, either respiratory or metabolic. The most likely explanation for these results is a metabolic acidosis.

Question 83

A 33-year-old man presented with a 6-month history of cough and breathlessness that tended to deteriorate as the week progressed and improve when he went on holiday. He was a lifelong non-smoker and worked as a paint sprayer in a car factory.

Investigations:

chest X-ray	normal

What further investigation would be most useful in establishing a diagnosis?

A: cardiorespiratory exercise test ○

B: histamine challenge ○

C: IgE antibody to isocyanate ○

D: serial peak expiratory flow rate measurements ○

E: transfer factor for CO (TL_{CO}) ○

Question 83

No Answer Given

Incorrect

A 33-year-old man presented with a 6-month history of cough and breathlessness that tended to deteriorate as the week progressed and improve when he went on holiday. He was a lifelong non-smoker and worked as a paint sprayer in a car factory.

Investigations:

chest X-ray	normal

What further investigation would be most useful in establishing a diagnosis?

Answers

A: cardiorespiratory exercise test
B: histamine challenge
C: IgE antibody to isocyanate
D: serial peak expiratory flow rate measurements
E: transfer factor for CO (TL_{CO})

Correct answer: D

Explanation

The presentation suggests occupational asthma. Serial peak flow measurements would be helpful in determining that his symptoms are worse at work with corresponding drop in the peak flow. The other tests will not necessarily show a link to his work.

Question 84

A 54-year-old right-handed woman following the sudden onset of difficulty in reading.

Investigations:

CT scan of head	recent left parietal lobe infarct

What additional feature is most likely to be present?

A: acalculia ○

B: confabulation ○

C: cortical deafness ○

D: expressive dysphasia ○

E: homonymous hemianopia ○

Question 84 ⌄

Next Question

Question 84

No Answer Given

Incorrect

A 54-year-old right-handed woman following the sudden onset of difficulty in reading.

Investigations:

CT scan of head	recent left parietal lobe infarct

What additional feature is most likely to be present?

Answers

A: acalculia
B: confabulation
C: cortical deafness
D: expressive dysphasia
E: homonymous hemianopia

Correct answer: A

Explanation

Dominant parietal lobe lesions can cause a variety of problems including receptive dysphasia, dyslexia, inattention and sensory impairments, and also Gerstmann syndrome, which is characterised by finger agnosia, acalculia, agraphia and left–right limb disorientation.

Question 85

A 37-year-old woman with breast cancer had a family history of breast and ovarian cancer. Molecular genetic testing revealed a BRCA1 mutation.

What is the normal function of BRCA1?

- A: angiogenesis ○
- B: apoptosis ○
- C: cell adhesion ○
- D: promotion of mitosis ○
- E: tumour suppression ○

Question 85
Next Question

Question 85

No Answer Given

Incorrect

A 37-year-old woman with breast cancer had a family history of breast and ovarian cancer. Molecular genetic testing revealed a BRCA1 mutation.

What is the normal function of BRCA1?

Answers

A: angiogenesis
B: apoptosis
C: cell adhesion
D: promotion of mitosis
E: tumour suppression

Correct answer: E

Explanation

BRCA1 is a tumour suppressor gene, coding a DNA repair protein.

Question 86

A 32-year-old woman presented with a 2-day history of fever and myalgia and a 6-hour history of headache, photophobia and neck stiffness.

Investigations:

white cell count	10.4×10^9/L (4.0–11.0)
random plasma glucose	5.2 mmol/L (3.0–11.0)
CSF:	
opening pressure	180 mmH_2O (120–250)
total protein	0.60 g/L (0.15–0.45)
glucose	3.5 mmol/L (3.3–4.4)
cell count	76/μL (≤5)
lymphocyte count	46/μL (≤3)
neutrophil count	30/μL (0)

What is the most likely causative organism?

A: enterovirus ○

B: Listeria monocytogenes ○

C: Mycobacterium tuberculosis ○

D: Neisseria meningitidis ○

E: Streptococcus pneumoniae ○

Question 86

No Answer Given

Incorrect

A 32-year-old woman presented with a 2-day history of fever and myalgia and a 6-hour history of headache, photophobia and neck stiffness.

Investigations:

white cell count	10.4 × 10^9/L (4.0–11.0)
random plasma glucose	5.2 mmol/L (3.0–11.0)
CSF:	
opening pressure	180 mmH_2O (120–250)
total protein	0.60 g/L (0.15–0.45)
glucose	3.5 mmol/L (3.3–4.4)
cell count	76/μL (≤5)
lymphocyte count	46/μL (≤3)
neutrophil count	30/μL (0)

What is the most likely causative organism?

Answers

A: enterovirus
B: Listeria monocytogenes
C: Mycobacterium tuberculosis
D: Neisseria meningitidis
E: Streptococcus pneumoniae

Correct answer: A

Explanation

The CSF values are most in keeping with viral meningitis and enterovirus is the most probable cause. It is probably early viral meningitis given that neutrophils are seen in addition to lymphocytes. She has no risk factors for listeria. The CSF in listeria shows high protein, low glucose and lymphocytosis. The CSF in tuberculous meningitis shows very high protein, low glucose and lymphocytosis. The CSF in Neisseria meningitides and Streptococcus pneumoniae shows high protein, low glucose (<50% plasma), and a very high neutrophil count.

Question 87

A clinical trial compared medical versus surgical treatment for stable angina. A large number of patients withdrew from the study.

What type of analysis should be used to estimate the likely benefits in similar groups of patients in future?

A: intention-to-treat ○

B: meta-analysis ○

C: on-treatment ○

D: post-hoc ○

E: sensitivity ○

Question 87
Next Question

Question 87

No Answer Given

Incorrect

A clinical trial compared medical versus surgical treatment for stable angina. A large number of patients withdrew from the study.

What type of analysis should be used to estimate the likely benefits in similar groups of patients in future?

Answers

A: intention-to-treat
B: meta-analysis
C: on-treatment
D: post-hoc
E: sensitivity

Correct answer: A

Explanation

Intention-to-treat is a common method of analysis in randomised trials and considered good practice. The outcomes of those who withdrew are included in the final analysis according to the arm of the trial to which they were originally assigned.

Question 88

A 46-year-old man presented within 1 hour of ingesting 40 tablets of slow-release theophylline.

What is the most appropriate initial management?

A: activated charcoal ○

B: alkaline diuresis ○

C: gastric lavage ○

D: observation only ○

E: whole-bowel irrigation ○

Question 88 ⌄

Next Question

Question 88

No Answer Given

Incorrect

A 46-year-old man presented within 1 hour of ingesting 40 tablets of slow-release theophylline.

What is the most appropriate initial management?

Answers

A: activated charcoal
B: alkaline diuresis
C: gastric lavage
D: observation only
E: whole-bowel irrigation

Correct answer: A

Explanation

Activated charcoal given within 1 hour adsorbs theophylline and reduces its absorption. Multiple doses of activated charcoal may also be given to enhance the elimination of theophylline.

Question 89

A 20-year-old woman presented 24 hours after taking an overdose of 80 tablets of levothyroxine 100 micrograms.

On examination, she was clinically euthyroid.

What is the most appropriate treatment?

A: beta-adrenoceptor blockade ○

B: forced alkaline diuresis ○

C: haemodialysis ○

D: no treatment required ○

E: stomach washout ○

Question 89
Next Question

Question 89

No Answer Given

Incorrect

A 20-year-old woman presented 24 hours after taking an overdose of 80 tablets of levothyroxine 100 micrograms.

On examination, she was clinically euthyroid.

What is the most appropriate treatment?

Answers

A: beta-adrenoceptor blockade
B: forced alkaline diuresis
C: haemodialysis
D: no treatment required
E: stomach washout

Correct answer: D

Explanation

This patient presented late following a levothyroxine overdose and she remained asymptomatic and did not develop any complications; therefore, no treatment was required.

Question 90

A 21-year-old African man was found unconscious at home.

On examination, he was drowsy but rousable. His pulse was 120 beats/min and his BP was 110/80 mmHg. His peripheral oxygen saturation was 98% (94–98), breathing air.

Investigations:

haemoglobin	150 g/L (130–180)
arterial blood gases, breathing air:	
PO_2	11.9 kPa (11.3–12.6)
PCO_2	4.7 kPa (4.7–6.0)
pH	7.42 (7.35–7.45)
H^+	38 nmol/L (35–45)
base excess	–1.0 mmol/L (±2.0)
oxygen saturation by four-wavelength spectrophotometry	55% (94–98)

What is the most likely explanation for the above findings?

A: carbon monoxide poisoning ○

B: faulty oximeter probe ○

C: haemoglobinopathy ○

D: methaemoglobinaemia ○

E: skin pigmentation ○

Question 90 ⌄

Next Question

Question 90

No Answer Given

Incorrect

A 21-year-old African man was found unconscious at home.

On examination, he was drowsy but rousable. His pulse was 120 beats/min and his BP was 110/80 mmHg. His peripheral oxygen saturation was 98% (94–98), breathing air.

Investigations:

haemoglobin	150 g/L (130–180)
arterial blood gases, breathing air:	
PO_2	11.9 kPa (11.3–12.6)
PCO_2	4.7 kPa (4.7–6.0)
pH	7.42 (7.35–7.45)
H^+	38 nmol/L (35–45)
base excess	–1.0 mmol/L (±2.0)
oxygen saturation by four-wavelength spectrophotometry	55% (94–98)

What is the most likely explanation for the above findings?

Answers

A: carbon monoxide poisoning
B: faulty oximeter probe
C: haemoglobinopathy
D: methaemoglobinaemia
E: skin pigmentation

Correct answer: A

Explanation

There is a wide discrepancy between the peripheral oxygen saturation (98%) and the oxygen saturation by four-wavelength spectrophotometry (55%).

The former passes two wavelengths of light to the photodetector and measures only oxyhaemoglobin and deoxyhaemoglobin. It cannot distinguish oxyhaemoglobin from carboxyhaemoglobin, which accumulates in carbon monoxide (CO) poisoning. The four-wavelength spectrophotometer, on the other hand, is able to do so.

In CO poisoning, CO avidly binds with haemoglobin to form carboxyhaemoglobin. As a result, the amount of oxyhaemoglobin falls.

The four-wavelength spectrophotometer accurately detects this fall of oxyhaemoglobin to 55%, but the two-wavelength peripheral pulse oximeter will give a false elevated reading – 98% being the sum of oxyhaemoglobin and carboxyhaemoglobin, which it cannot measure separately.

Question 91

An 80-year-old woman presented with a 6-month history of progressive breathlessness.

On examination, her chest was normal, but there was a large goitre.

Which investigation is most useful to determine whether the goitre is the cause of her breathlessness?

- A: bronchoscopy ○
- B: CT scan of neck and chest ○
- C: FVC ○
- D: respiratory flow–volume loop ○
- E: X-ray of thoracic inlet ○

Question 91

No Answer Given

Incorrect

An 80-year-old woman presented with a 6-month history of progressive breathlessness.

On examination, her chest was normal, but there was a large goitre.

Which investigation is most useful to determine whether the goitre is the cause of her breathlessness?

Answers

A: bronchoscopy
B: CT scan of neck and chest
C: FVC
D: respiratory flow–volume loop
E: X-ray of thoracic inlet

Correct answer: D

Explanation

Pulmonary function tests are the most sensitive indicator of goitre being the cause of her breathlessness. The flow–volume loop will show marked reduction of the peak inspiratory and expiratory flow, unlike most pulmonary causes of breathlessness. Her FVC will not be affected by the presence of goitre. Bronchoscopy, CT scan and X-ray of thoracic inlet may have other uses in the diagnostic pathway but will not be the best way to confirm that it is the goitre causing breathlessness.

Question 92

A 59-year-old man was found to have a squamous cell lung carcinoma in his right upper lobe. He was a smoker and reported breathlessness on modest exertion. He also complained of chronic back pain.

What is the most useful investigation in assessing his suitability for surgical resection?

A: bone scan ○

B: bronchoscopy ○

C: cardiopulmonary exercise testing ○

D: PET-CT scan ○

E: ventilation/perfusion isotope lung scan ○

Question 92 ⌄

Next Question

Question 92

No Answer Given

Incorrect

A 59-year-old man was found to have a squamous cell lung carcinoma in his right upper lobe. He was a smoker and reported breathlessness on modest exertion. He also complained of chronic back pain.

What is the most useful investigation in assessing his suitability for surgical resection?

Answers

A: bone scan
B: bronchoscopy
C: cardiopulmonary exercise testing
D: PET-CT scan
E: ventilation/perfusion isotope lung scan

Correct answer: D

Explanation

Non-small cell lung carcinoma confined to the right upper lobe and amenable to curative right upper lobectomy is suggested. However, distant bony metastases need to be excluded in view of the back pain, albeit chronic in duration.

PET-CT scan is the superior option to bone scan as it is able to stage the mediastinum as well with a high degree of accuracy. Complex preoperative evaluation for lung resection – cardiopulmonary exercise testing and ventilation/perfusion isotope lung scan should only be done if staging tests confirm resectability.

Question 93
Next Question

Question 93

A 58-year-old man was seen with progressive breathlessness in the outpatient clinic. He had undergone coronary artery bypass grafting 3 years previously and this had been complicated by a resternotomy for tamponade. He recovered well but had started to feel breathless and fatigued over the past 12 months. He had a history of type 2 diabetes mellitus and hypertension. He was a current smoker.

A diagnosis of constrictive pericarditis was made.

What is the most common physical finding seen in this group of patients?

A: ascites ○

B: finger clubbing ○

C: hepatomegaly ○

D: pericardial knock ○

E: pleural effusion ○

Question 93

No Answer Given

Incorrect

A 58-year-old man was seen with progressive breathlessness in the outpatient clinic. He had undergone coronary artery bypass grafting 3 years previously and this had been complicated by a resternotomy for tamponade. He recovered well but had started to feel breathless and fatigued over the past 12 months. He had a history of type 2 diabetes mellitus and hypertension. He was a current smoker.

A diagnosis of constrictive pericarditis was made.

What is the most common physical finding seen in this group of patients?

Answers

A: ascites
B: finger clubbing
C: hepatomegaly
D: pericardial knock
E: pleural effusion

Correct answer: C

Explanation

Hepatomegaly is the best answer. Hepatomegaly is the earliest and most consistent feature of pericardial constriction of the options here.

Ascites (a later phenomenon than hepatomegaly) and pericardial knock (recognised in around 50% of cases) are also features of pericardial constriction, making this a true “best-of” question. Finger clubbing is not a feature of constriction, however, and pleural effusion is uncommon.

Question 94

A 22-year-old woman presented with acute chest pains, 2 days after the uncomplicated delivery of her first child, and was found to have an anterior ST-elevation myocardial infarction. She had no conventional risk factors for coronary artery disease.

What is the most likely aetiology of her myocardial infarction?

A: atherosclerotic plaque rupture ○

B: coronary artery dissection ○

C: myocardial bridging ○

D: paradoxical embolism across patent foramen ovale ○

E: takotsubo cardiomyopathy ○

Question 94 ⌄

Next Question

Question 94

No Answer Given

Incorrect

A 22-year-old woman presented with acute chest pains, 2 days after the uncomplicated delivery of her first child, and was found to have an anterior ST-elevation myocardial infarction. She had no conventional risk factors for coronary artery disease.

What is the most likely aetiology of her myocardial infarction?

Answers

A: atherosclerotic plaque rupture
B: coronary artery dissection
C: myocardial bridging
D: paradoxical embolism across patent foramen ovale
E: takotsubo cardiomyopathy

Correct answer: B

Explanation

Coronary artery dissection is the best answer, as it is a well-recognised cause of myocardial infarction in relation to pregnancy. It is the most likely cause in this young patient who is in the early post-partum phase, and who has no recognised risk factors for coronary atherosclerosis.

Atherosclerotic plaque rupture is the main alternative to coronary dissection here, and would still need to be excluded, given that it is the most common cause of myocardial infarction otherwise. Myocardial bridging is a rare cause of myocardial ischaemia or infarction, as it causes coronary constriction during ventricular systole, whereas coronary blood flow is mainly diastolic. Paradoxical embolism across patent foramen ovale is a rare though well-recognised cause of myocardial infarction, and may be more prevalent during pregnancy, which is a hypercoagulable state. Takotsubo cardiomyopathy is also recognised during and after pregnancy, but is more rare than atherosclerotic plaque rupture or coronary artery dissection.

Question 95

A 74-year-old man presented with severe rectal bleeding. He was normally fit and well and had had no previous problems with his bowels.

On examination, he was pale. His pulse was 110 beats/min and his BP was 100/60 mmHg. Abdominal examination was normal. Rectal examination showed fresh blood on the glove.

Investigations:

haemoglobin	85 g/L (130–180)
white cell count	7.5 × 10^9/L (4.0–11.0)

What is the most likely diagnosis?

A: bleeding diverticulum ○

B: carcinoma of colon ○

C: haemorrhoids ○

D: inflammatory bowel disease ○

E: Meckel's diverticulum ○

Question 95

Next Question

Question 95

No Answer Given

Incorrect

A 74-year-old man presented with severe rectal bleeding. He was normally fit and well and had had no previous problems with his bowels.

On examination, he was pale. His pulse was 110 beats/min and his BP was 100/60 mmHg. Abdominal examination was normal. Rectal examination showed fresh blood on the glove.

Investigations:

haemoglobin	85 g/L (130–180)
white cell count	7.5 × 10^9/L (4.0–11.0)

What is the most likely diagnosis?

Answers

A: bleeding diverticulum
B: carcinoma of colon
C: haemorrhoids
D: inflammatory bowel disease
E: Meckel's diverticulum

Correct answer: A

Explanation

The most common cause of such heavy bleeding in a 74-year-old is diverticular-disease related. It is very unusual for cancer to bleed so heavily and there often is a preceding history of bleeding. Likewise, haemorrhoidal bleeding rarely causes haemodynamic instability. Inflammatory bowel disease very unusually leads to such heavy bleeding and there will often be a preceding history of symptoms.

Question 96

A 56-year-old woman with hypertension was found to have abnormal liver function tests when she attended for routine health check. She was taking bendroflumethiazide, ramipril and simvastatin.

On examination, her BMI was 30.0 kg/m^2 (18.0–25.0).

Investigations:

serum total bilirubin	15 μmol/L (1–22)
serum alanine aminotransferase	65 U/L (5–35)
serum aspartate aminotransferase	75 U/L (1–31)
serum alkaline phosphatase	305 U/L (45–105)
serum gamma glutamyl transferase	150 U/L (4–35)

What next investigation is most likely to establish the liver diagnosis?

A: antimitochondrial antibodies ○

B: CT scan of abdomen ○

C: MRCP ○

D: serum ferritin ○

E: ultrasound scan of abdomen ○

Question 96 ⌄

Next Question

Question 96

No Answer Given

Incorrect

A 56-year-old woman with hypertension was found to have abnormal liver function tests when she attended for routine health check. She was taking bendroflumethiazide, ramipril and simvastatin.

On examination, her BMI was 30.0 kg/m^2 (18.0–25.0).

Investigations:

serum total bilirubin	15 µmol/L (1–22)
serum alanine aminotransferase	65 U/L (5–35)
serum aspartate aminotransferase	75 U/L (1–31)
serum alkaline phosphatase	305 U/L (45–105)
serum gamma glutamyl transferase	150 U/L (4–35)

What next investigation is most likely to establish the liver diagnosis?

Answers

A: antimitochondrial antibodies
B: CT scan of abdomen
C: MRCP
D: serum ferritin
E: ultrasound scan of abdomen

Correct answer: A

Explanation

Antimitochondrial antibodies are present in over 90% of patients with primary biliary cholangitis (PBC). The pattern of deranged liver function tests is cholestatic and likely indicates PBC. A CT scan and MRCP are both unhelpful in diagnosing PBC as it mainly affects small bile ducts. Serum ferritin will be unhelpful as she is unlikely to have haemochromatosis. Ultrasound scan is indicated and helpful to exclude other associated abnormalities such as fatty liver. However, it is non-specific and will not establish a diagnosis.

Question 97

A 72-year-old man presented with a 3-month history of worsening neck and right arm pain radiating down the inner forearm, associated with numbness and tingling involving the index and middle fingers.

Examination of the right upper limb revealed reduced forearm pronation and wrist flexion, decreased sensation in the index and middle fingers, and diminished triceps tendon reflex.

What is the most likely site of the lesion?

- A: axillary nerve ○
- B: C6 root ○
- C: C7 root ○
- D: median nerve ○
- E: radial nerve ○

Question 97 ⌄

Next Question

Question 97

No Answer Given

Incorrect

A 72-year-old man presented with a 3-month history of worsening neck and right arm pain radiating down the inner forearm, associated with numbness and tingling involving the index and middle fingers.

Examination of the right upper limb revealed reduced forearm pronation and wrist flexion, decreased sensation in the index and middle fingers, and diminished triceps tendon reflex.

What is the most likely site of the lesion?

Answers

A: axillary nerve
B: C6 root
C: C7 root
D: median nerve
E: radial nerve

Correct answer: C

Explanation

The sensory and motor abnormalities described are as a result of a lesion at the C7 nerve root causing sensory loss in the C7 and 8 dermatome and motor abnormalities attributed to the C7 myotome.

Question 98

A 78-year-old woman presented with a 9-month history of worsening urinary frequency and urge incontinence.

Examination was normal.

Investigations:

post-void bladder scan	10 mL residual volume

Antagonism of which neurotransmitter is most likely to improve her symptoms?

A: acetylcholine ○

B: adrenaline ○

C: dopamine ○

D: noradrenaline ○

E: serotonin ○

Question 98
Next Question

Question 98

No Answer Given

Incorrect

A 78-year-old woman presented with a 9-month history of worsening urinary frequency and urge incontinence.

Examination was normal.

Investigations:

post-void bladder scan	10 mL residual volume

Antagonism of which neurotransmitter is most likely to improve her symptoms?

Answers

A: acetylcholine
B: adrenaline
C: dopamine
D: noradrenaline
E: serotonin

Correct answer: A

Explanation

Contraction of the bladder detrusor muscle is stimulated by acetylcholine. Anticholinergic agents inhibit the binding of acetylcholine to the cholinergic receptor, thereby suppressing involuntary bladder contraction of any aetiology.

Question 99

A 78-year-old woman presented with chronic induration of the skin on both legs. She had a history of chronic venous insufficiency and had previously been treated for venous ulceration.

On examination, she had bilateral reddish-brown skin pigmentation.

She was found to have lipodermatosclerosis.

What structure is implicated in the pathophysiology of this condition?

A: dermis ○

B: hypodermis ○

C: stratum basale ○

D: stratum corneum ○

E: stratum spinosum ○

Question 99 ⌄

Next Question

Question 99

No Answer Given

Incorrect

A 78-year-old woman presented with chronic induration of the skin on both legs. She had a history of chronic venous insufficiency and had previously been treated for venous ulceration.

On examination, she had bilateral reddish-brown skin pigmentation.

She was found to have lipodermatosclerosis.

What structure is implicated in the pathophysiology of this condition?

Answers

A: dermis
B: hypodermis
C: stratum basale
D: stratum corneum
E: stratum spinosum

Correct answer: B

Explanation

Lipodermatosclerosis or sclerosing panniculitis is an extensive induration of the skin, often in association with leg ulcers and most commonly related to venous hypertension; it is a chronic inflammation, with fibrous tissue that involves and replaces the hypodermis and, if extensive, the papillary dermis.

Question 100

An 89-year-old woman presented with general deterioration and worsening mobility. She had vascular dementia, and a history of recent falls and urinary incontinence. She consumed 21 units of alcohol per week.

Her Waterlow score was 21/50.

Investigations:

serum albumin	30 g/L (37–49)

Which parameter is most likely to have contributed to the patient's high Waterlow score?

A: alcohol consumption ○

B: cognitive status ○

C: continence ○

D: history of recent falls ○

E: serum albumin level ○

Question 100 ⌄

Next Question

Question 100

No Answer Given

Incorrect

An 89-year-old woman presented with general deterioration and worsening mobility. She had vascular dementia, and a history of recent falls and urinary incontinence. She consumed 21 units of alcohol per week.

Her Waterlow score was 21/50.

Investigations:

serum albumin	30 g/L (37–49)

Which parameter is most likely to have contributed to the patient’s high Waterlow score?

Answers

A: alcohol consumption
B: cognitive status
C: continence
D: history of recent falls
E: serum albumin level

Correct answer: C

Explanation

The Waterlow score is a tool used to assess the risk of development of a pressure sore. It uses the following parameters to risk-stratify the patient: body weight, nutritional status, continence, skin type, mobility, age and sex. It may be used both in an acute setting or in care homes.

Question 101

A 68-year-old man became acutely breathless following admission with a 2-week history of nausea, vomiting and diarrhoea. Despite fluid resuscitation, he had remained anuric 6 hours after admission.

On examination, his BP was 104/63 mmHg, his JVP was 10 cm above the sternal angle and his respiratory rate was 32 breaths/min. He had bibasal respiratory crackles and pitting oedema in both ankles.

Investigations:

serum sodium	138 mmol/L (137–144)
serum potassium	5.6 mmol/L (3.5–4.9)
serum bicarbonate	12 mmol/L (20–28)
serum urea	29.0 mmol/L (2.5–7.0)
serum creatinine	640 μmol/L (60–110)

What is the most appropriate next step in management?

A: dopamine at renal dose ○

B: furosemide ○

C: haemodialysis ○

D: insulin and glucose 5% ○

E: sodium bicarbonate ○

Question 101 ⌄

Next Question

Question 101

No Answer Given

Incorrect

A 68-year-old man became acutely breathless following admission with a 2-week history of nausea, vomiting and diarrhoea. Despite fluid resuscitation, he had remained anuric 6 hours after admission.

On examination, his BP was 104/63 mmHg, his JVP was 10 cm above the sternal angle and his respiratory rate was 32 breaths/min. He had bibasal respiratory crackles and pitting oedema in both ankles.

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serum creatinine	640 μmol/L (60–110)

What is the most appropriate next step in management?

Answers

A: dopamine at renal dose
B: furosemide
C: haemodialysis
D: insulin and glucose 5%
E: sodium bicarbonate

Correct answer: C

Explanation

Haemodialysis is the right answer as he is already fluid overloaded. Furosemide will not work in this situation to cause a diuresis as the patient is anuric. Sodium bicarbonate 1.26% will worsen his pulmonary oedema. His hyperkalaemia is not severe enough for insulin and glucose treatment. There is no evidence for dopamine in chronic kidney disease.

Question 102

A 52-year-old woman presented with an episode of weakness of the left side of her face and left arm that resolved after 3 hours. She was otherwise well and had no significant medical history.

On examination, her BP was 110/75 mmHg.

Investigations:

ECG	atrial fibrillation with a rate of 110 beats/min
echocardiogram	structurally normal heart

Treatment was started with atenolol and warfarin.

She underwent a successful DC cardioversion 4 weeks later.

How long should she continue with warfarin therapy?

A: 4 weeks ○

B: 6 months ○

C: 1 year ○

D: 3 years ○

E: lifelong ○

Question 102 ⌄

Next Question

Question 102

No Answer Given

Incorrect

A 52-year-old woman presented with an episode of weakness of the left side of her face and left arm that resolved after 3 hours. She was otherwise well and had no significant medical history.

On examination, her BP was 110/75 mmHg.

Investigations:

ECG	atrial fibrillation with a rate of 110 beats/min
echocardiogram	structurally normal heart

Treatment was started with atenolol and warfarin.

She underwent a successful DC cardioversion 4 weeks later.

How long should she continue with warfarin therapy?

Answers

A: 4 weeks
B: 6 months
C: 1 year
D: 3 years
E: lifelong

Correct answer: E

Explanation

This woman has a history of transient ischaemic attack, which puts her at high risk of recurrent embolic episodes, even after a successful cardioversion. She would score 3 on the CHA_2DS_2-VASc Score and anticoagulation should be considered lifelong following a discussion about stroke and bleeding risk.

Question 103

A 72-year-old man presented following a haematemesis. He had a history of alcohol-related liver cirrhosis.

On examination, his pulse was 110 beats/min and his BP was 90/60 mmHg.

Investigations:

haemoglobin	104 g/L (130–180)

What is the most appropriate first step in management?

A: blood transfusion ○

B: intravenous albumin ○

C: intravenous gelatin ○

D: intravenous omeprazole ○

E: intravenous sodium chloride 0.9% ○

Question 103

No Answer Given

Incorrect

A 72-year-old man presented following a haematemesis. He had a history of alcohol-related liver cirrhosis.

On examination, his pulse was 110 beats/min and his BP was 90/60 mmHg.

Investigations:

haemoglobin	104 g/L (130–180)

What is the most appropriate first step in management?

Answers

A: blood transfusion
B: intravenous albumin
C: intravenous gelatin
D: intravenous omeprazole
E: intravenous sodium chloride 0.9%

Correct answer: E

Explanation

Resuscitation with a crystalloid, such as sodium chloride 0.9% or compound sodium lactate intravenous solution, is the best management in shocked patients with or without liver disease. Use of albumin is not recommended in acute shock because of gastrointestinal bleeding, nor is there any role for gelatin any longer. Blood transfusion may be required at some stage, if there is a further drop in haemoglobin, but not before fluid resuscitation. There is no evidence for an intravenous proton pump inhibitor before endoscopy.

Question 104

A 57-year-old woman attended the diabetes-nephrology clinic for annual review. Her history included hypertension, type 2 diabetes mellitus and diabetic retinopathy.

On examination, her BP was 168/98 mmHg. Urinalysis showed protein 1+, glucose 1+.

What is the most useful investigation to determine her future cardiovascular risk?

A: 24-h urine collection for protein estimation ○

B: urinary lipid peroxide test ○

C: urine albumin:creatinine ratio ○

D: urine microscopy ○

E: urine protein:creatinine ratio ○

Question 104 ⌄

Next Question

Question 104

No Answer Given

Incorrect

A 57-year-old woman attended the diabetes-nephrology clinic for annual review. Her history included hypertension, type 2 diabetes mellitus and diabetic retinopathy.

On examination, her BP was 168/98 mmHg. Urinalysis showed protein 1+, glucose 1+.

What is the most useful investigation to determine her future cardiovascular risk?

Answers

A: 24-h urine collection for protein estimation
B: urinary lipid peroxide test
C: urine albumin:creatinine ratio
D: urine microscopy
E: urine protein:creatinine ratio

Correct answer: C

Explanation

Proteinuria is an independent predictor of cardiovascular risk in patients with diabetes mellitus and/or hypertension.

Screening for proteinuria by performing a spot urine albumin:creatinine ratio is the most commonly performed investigation to assess this risk. From a pathophysiological perspective, albuminuria reflects glomerular protein leak, whereas proteinuria more broadly reflects protein excretion into the urine from anywhere along the nephron. Additionally, a urine albumin:creatinine ratio is more sensitive than a urine protein:creatinine ratio for detecting low levels of proteinuria (e.g. negative or protein 1+ on reagent strip urinalysis) and is the NICE recommended method for screening for diabetic nephropathy. This makes urine albumin:creatinine ratio a better option than protein:creatinine ratio.

A 24-h urine collection is more cumbersome for patients to perform and, as they are commonly incompletely performed, are often not accurate. Urinary lipid peroxide is a potential biomarker to assess oxidative stress. It is not routinely used in clinical practice and is obviously incorrect. Urine microscopy will not give information on proteinuria.

Question 105

A 77-year-old woman presented with a 1-day history of fever and tiredness. She had been discharged after surgery for a fractured neck of femur 1 week previously. She had received a 2-unit red cell transfusion before discharge. She was taking nitrofurantoin for a urinary tract infection and rivaroxaban as thromboprophylaxis.

Investigations (before transfusion):

haemoglobin	78 g/L (115–165)

Investigations (current):

haemoglobin	76 g/L (115–165)
MCV	101 fL (80–96)
white cell count	10.8 × 10^9/L (4.0–11.0)
platelet count	207 × 10^9/L (150–400)
reticulocyte count	146 × 10^9/L (25–85)

direct antiglobulin test	strongly positive

What is the most likely cause of her anaemia?

A: autoimmune haemolytic anaemia ○

B: bleeding ○

C: delayed haemolytic transfusion reaction ○

D: drug-induced haemolytic anaemia ○

E: urinary tract infection ○

Question 105 ⌄

Next Question

Question 105

No Answer Given

Incorrect

A 77-year-old woman presented with a 1-day history of fever and tiredness. She had been discharged after surgery for a fractured neck of femur 1 week previously. She had received a 2-unit red cell transfusion before discharge. She was taking nitrofurantoin for a urinary tract infection and rivaroxaban as thromboprophylaxis.

Investigations (before transfusion):

haemoglobin	78 g/L (115–165)

Investigations (current):

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reticulocyte count	146 × 10^9/L (25–85)

direct antiglobulin test	strongly positive

What is the most likely cause of her anaemia?

Answers

A: autoimmune haemolytic anaemia
B: bleeding
C: delayed haemolytic transfusion reaction
D: drug-induced haemolytic anaemia
E: urinary tract infection

Correct answer: C

Explanation

The history given in the stem makes it clear that the current blood sample was taken 1 week after the transfusion. The investigations show that there has been an inadequate rise in haemoglobin with a mild macrocytosis, elevated reticulocyte count (which causes the increased MCV) and a positive DAT (telling you that there is antibody coating the red cells). This would all be consistent with a delayed haemolytic transfusion reaction. Autoimmune haemolytic anaemia would be consistent with the results seen, though would be less likely in this context, as it would indicate the development of a second pathology unrelated to the information in the stem. Blood loss could cause a fall in the haemoglobin, though would not be associated with a positive DAT. A drug-induced haemolytic anaemia related to nitrofurantoin is feasible, though the haemolysis would likely be more significant than the relatively mild picture noted here. Urinary tract infection is not appropriate as infection-mediated haemolysis would be less likely than delayed haemolytic transfusion reaction in this stem.

Question 106

A 75-year-old man was admitted with a 10-day history of generalised reddening of his skin, accompanied by shivering and thirst. He had a history of psoriasis.

On examination, his pulse was 110 beats/min and his BP was 110/60 mmHg. He had dependent oedema. His skin was uniformly erythematous and scaly.

What is the most appropriate initial treatment?

A: oral furosemide ○

B: oral prednisolone ○

C: topical coal tar solution ○

D: topical dithranol ointment ○

E: topical white soft paraffin ○

Question 106

No Answer Given

Incorrect

A 75-year-old man was admitted with a 10-day history of generalised reddening of his skin, accompanied by shivering and thirst. He had a history of psoriasis.

On examination, his pulse was 110 beats/min and his BP was 110/60 mmHg. He had dependent oedema. His skin was uniformly erythematous and scaly.

What is the most appropriate initial treatment?

Answers

A: oral furosemide
B: oral prednisolone
C: topical coal tar solution
D: topical dithranol ointment
E: topical white soft paraffin

Correct answer: E

Explanation

Based on the fact that this patient’s skin is uniformly erythematous and scaly, and he has a history of psoriasis, the most likely diagnosis is erythrodermic psoriasis. This inflammation in the skin can sometimes result in oedema of the legs. Initial treatment is with topical white soft paraffin smeared all over the skin, which helps to make the skin more comfortable, partially reduces the inflammation, improves the skin barrier (which is generally defective in erythroderma), thus helping to prevent entry of bacteria through the skin (and prevent septicaemia), and helps to reduce water loss from the skin (and prevent dehydration). While using topical white soft paraffin, relevant investigations can be performed to determine the cause of the erythroderma and to determine which systemic therapy can be employed to treat the cause of the erythroderma.

The other options are incorrect because topical coal tar and dithranol irritate very inflamed skin and can exacerbate the inflammation, so are best avoided. Oral prednisolone is contraindicated because of the risk of precipitating generalised pustular psoriasis, and oral furosemide is unhelpful (because the oedema is due to the intense skin inflammation, which is not treatable by furosemide) and may cause further dehydration.

The vapour from soft paraffin is flammable. Patients, especially smokers, should be advised of this and told never to allow a naked flame next to their skin while using it.

Question 107

A 24-year-old woman presented with shortness of breath of sudden onset. She had been at a nightclub and had been drinking wine but denied taking any illicit substances. She had no relevant medical history. She was a non-smoker.

On examination, her temperature was 37.0°C, her pulse was 100 beats/min and her BP was 110/70 mmHg. Her respiratory rate was 32 breaths/min and her oxygen saturation was 98% (94–98) breathing air.

Investigations:

arterial blood gases, breathing air:	
PO_2	12.9 kPa (11.3–12.6)
PCO_2	3.8 kPa (4.7–6.0)
pH	7.44 (7.35–7.45)
H^+	36 nmol/L (35–45)
bicarbonate	19 mmol/L (21–29)
base excess	–2.0 mmol/L (±2.0)

chest X-ray	normal

What is the most likely diagnosis?

A: asthma ○

B: hyperthyroidism ○

C: hyperventilation ○

D: pulmonary embolism ○

E: vocal cord dysfunction ○

Question 107

Next Question

Question 107

No Answer Given

Incorrect

A 24-year-old woman presented with shortness of breath of sudden onset. She had been at a nightclub and had been drinking wine but denied taking any illicit substances. She had no relevant medical history. She was a non-smoker.

On examination, her temperature was 37.0°C, her pulse was 100 beats/min and her BP was 110/70 mmHg. Her respiratory rate was 32 breaths/min and her oxygen saturation was 98% (94–98) breathing air.

Investigations:

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PO_2	12.9 kPa (11.3–12.6)
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H^+	36 nmol/L (35–45)
bicarbonate	19 mmol/L (21–29)
base excess	–2.0 mmol/L (±2.0)

chest X-ray	normal

What is the most likely diagnosis?

Answers

A: asthma
B: hyperthyroidism
C: hyperventilation
D: pulmonary embolism
E: vocal cord dysfunction

Correct answer: C

Explanation

Mild hyperoxaemia (while breathing room air) and respiratory alkalosis associated with sudden onset of dyspnoea and tachypnoea is strongly suggestive of hyperventilation. Her supranormal PO_2 argues against asthma or pulmonary embolism.

Question 108

A 30-year-old man with Marfan syndrome presented with the sudden onset of interscapular pain.

Investigations:

CT scan of chest	aortic dissection

Which protein is most commonly abnormal in this syndrome?

A: collagen ○

B: desmin ○

C: elastin ○

D: fibrillin ○

E: myosin ○

Question 108 ⌄

Next Question

Question 108

No Answer Given

Incorrect

A 30-year-old man with Marfan syndrome presented with the sudden onset of interscapular pain.

Investigations:

CT scan of chest	aortic dissection

Which protein is most commonly abnormal in this syndrome?

Answers

A: collagen
B: desmin
C: elastin
D: fibrillin
E: myosin

Correct answer: D

Explanation

Collagen: abnormalities in collagen metabolism are associated with vascular abnormalities such as spontaneous coronary dissection.

Desmin: desminopathy, a disease caused by dysfunctional mutations in desmin, presents as cardiomyopathy and may cause arrhythmias.

Elastin: aortic supravalvular stenosis is the most common cardiac anomaly, present in 64% of patients with Williams syndrome (elastin gene locus microdeletion).

Fibrillin: abnormalities of fibrillin metabolism are seen in most patients and can present with aortic dissection.

Myosin: mutations in cardiac myosin-binding protein C (MyBPC) gene are associated with hypertrophic cardiomyopathy (HCM).

Question 109

A 70-year-old man presented with acute abdominal pain.

At laparotomy, his bowel was found to be ischaemic from the lower part of the duodenum through to midway along the transverse colon.

What artery is most likely to be occluded?

A: coeliac ○

B: ileocolic ○

C: inferior mesenteric ○

D: middle colic ○

E: superior mesenteric ○

Question 109 ⌄
Next Question

Question 109

No Answer Given

Incorrect

A 70-year-old man presented with acute abdominal pain.

At laparotomy, his bowel was found to be ischaemic from the lower part of the duodenum through to midway along the transverse colon.

What artery is most likely to be occluded?

Answers

A: coeliac
B: ileocolic
C: inferior mesenteric
D: middle colic
E: superior mesenteric

Correct answer: E

Explanation

The superior mesenteric arises from the abdominal aorta and supplies the small intestine from the distal duodenum as well as the large intestine as far as 2/3 of the transverse colon.

Question 110

A 21-year-old man presented to the emergency department after he had vomited a small amount of blood earlier that day, following an episode of severe retching. He was otherwise well and was not taking any medication.

On examination, his pulse was 95 beats/min and his BP was 115/85 mmHg.

Investigations:

haemoglobin	133 g/L (130–180)
prothrombin time	12.0 s (11.5–15.5)
serum urea	5.2 mmol/L (2.5–7.0)
serum gamma glutamyl transferase	25 U/L (<50)

What is the most appropriate next step in management?

A: admit for 24-h observation ○

B: admit for urgent upper gastrointestinal endoscopy ○

C: discharge with reassurance ○

D: refer for outpatient upper gastrointestinal endoscopy ○

E: refer for outpatient Helicobacter pylori breath test ○

Question 110 ⌄

Next Question

Question 110

No Answer Given

Incorrect

A 21-year-old man presented to the emergency department after he had vomited a small amount of blood earlier that day, following an episode of severe retching. He was otherwise well and was not taking any medication.

On examination, his pulse was 95 beats/min and his BP was 115/85 mmHg.

Investigations:

haemoglobin	133 g/L (130–180)
prothrombin time	12.0 s (11.5–15.5)
serum urea	5.2 mmol/L (2.5–7.0)
serum gamma glutamyl transferase	25 U/L (<50)

What is the most appropriate next step in management?

Answers

A: admit for 24-h observation
B: admit for urgent upper gastrointestinal endoscopy
C: discharge with reassurance
D: refer for outpatient upper gastrointestinal endoscopy
E: refer for outpatient Helicobacter pylori breath test

Correct answer: C

Explanation

He is likely to have sustained a Mallory–Weiss tear based on the presentation of bleeding following retching. This is a low-risk upper gastrointestinal (GI) bleed. His haemoglobin and urea are normal and he is haemodynamically stable. He has no comorbidities. Using risk assessment tools for upper GI bleeding (such as the Blatchford score), this patient would be very low risk and can be discharged home with advice to present again if further bleeding occurs. Although some may refer the patient for endoscopy, this investigation is not needed if there is a clear history suggestive of Mallory–Weiss tear. Helicobacter pylori testing is not indicated as he has no symptoms suggestive of infection.

Question 111

A 21-year-old woman presented with a 12-month history of amenorrhoea following discontinuation of the combined oral contraceptive pill, which she had been taking for 2 years. She had undergone a normal menarche and had had a regular menstrual cycle until she started training to run marathons.

On examination, her BMI was 18.0 kg/m^2 (18.0–25.0). She had mild facial acne and normal secondary sexual characteristics.

What is the most likely cause of her menstrual disturbance?

A: hypothalamic amenorrhoea ○

B: macroprolactinoma ○

C: polycystic ovary syndrome ○

D: post-contraceptive pill amenorrhoea ○

E: premature ovarian failure ○

Question 111

No Answer Given

Incorrect

A 21-year-old woman presented with a 12-month history of amenorrhoea following discontinuation of the combined oral contraceptive pill, which she had been taking for 2 years. She had undergone a normal menarche and had had a regular menstrual cycle until she started training to run marathons.

On examination, her BMI was 18.0 kg/m^2 (18.0–25.0). She had mild facial acne and normal secondary sexual characteristics.

What is the most likely cause of her menstrual disturbance?

Answers

A: hypothalamic amenorrhoea
B: macroprolactinoma
C: polycystic ovary syndrome
D: post-contraceptive pill amenorrhoea
E: premature ovarian failure

Correct answer: A

Explanation

The question shows that the patient's BMI is on the lower limit of the normal range and that she has been training for marathons, implying weight loss with intense exercise, which is known to cause the hypothalamus to reduce production of gonadotropin-releasing hormone (GnRH). The clinical picture given does not fit polycystic ovary syndrome, macroprolactinoma, premature ovarian failure or post-contraceptive pill amenorrhoea.

Question 112

An 82-year-old man developed agitation and confusion, with visual hallucinations, 1 day after surgery for a hip fracture. His family reported that he had been forgetful for the past year but was otherwise independent.

On examination, he was easily distracted and could not comply with the mental test examination.

What is the most likely diagnosis?

A: Alzheimer’s disease ○

B: delirium ○

C: dementia with Lewy bodies ○

D: mania ○

E: schizophrenia ○

Question 112

Next Question

Question 112

No Answer Given

Incorrect

An 82-year-old man developed agitation and confusion, with visual hallucinations, 1 day after surgery for a hip fracture. His family reported that he had been forgetful for the past year but was otherwise independent.

On examination, he was easily distracted and could not comply with the mental test examination.

What is the most likely diagnosis?

Answers

A: Alzheimer’s disease
B: delirium
C: dementia with Lewy bodies
D: mania
E: schizophrenia

Correct answer: B

Explanation

The context and symptoms suggest delirium as the cause. Delirium is characterised by acute onset of confusion and fluctuating course, inattention, disorganised thinking and altered level of consciousness. The history is too short to suggest that this is dementia. There is also nothing in the history to suggest a psychiatric condition.

Question 113

A 30-year-old man presented with a 2-year history of an intermittent facial rash.

On examination, there was an erythematous, scaly rash involving the nasolabial folds and eyebrows, and the skin overlying the sternum. There was mild scaling of the scalp. The nails were normal.

What is the most likely diagnosis?

A: asteatotic eczema ○

B: atopic eczema ○

C: contact dermatitis ○

D: psoriasis ○

E: seborrhoeic dermatitis ○

Question 113 ⌄

Next Question

Question 113

No Answer Given

Incorrect

A 30-year-old man presented with a 2-year history of an intermittent facial rash.

On examination, there was an erythematous, scaly rash involving the nasolabial folds and eyebrows, and the skin overlying the sternum. There was mild scaling of the scalp. The nails were normal.

What is the most likely diagnosis?

Answers

A: asteatotic eczema
B: atopic eczema
C: contact dermatitis
D: psoriasis
E: seborrhoeic dermatitis

Correct answer: E

Explanation

The description of an erythematous scaly rash involving the nasolabial folds, eyebrows and mid sternum, with mild scaling of the scalp is typical of seborrhoeic dermatitis, which is why this is the most likely diagnosis in this list of answers.

Question 114

A 30-year-old man with type 1 diabetes mellitus presented with onychomycosis affecting four digits of his left foot. This had been unresponsive to a 6-month course of topical amorolfine.

Investigations:

nail culture	Trichophyton rubrum

What is the most appropriate next treatment?

A: oral fluconazole ○

B: oral nystatin ○

C: oral terbinafine ○

D: topical amphotericin ○

E: topical nystatin ○

Question 114

No Answer Given

Incorrect

A 30-year-old man with type 1 diabetes mellitus presented with onychomycosis affecting four digits of his left foot. This had been unresponsive to a 6-month course of topical amorolfine.

Investigations:

nail culture	Trichophyton rubrum

What is the most appropriate next treatment?

Answers

A: oral fluconazole
B: oral nystatin
C: oral terbinafine
D: topical amphotericin
E: topical nystatin

Correct answer: C

Explanation

This is in keeping with NICE guidelines for the management of athlete's foot. In an adult with severe or extensive disease, or when topical treatment has failed, options include an oral antifungal treatment. If an oral antifungal is indicated, prescribe terbinafine, griseofulvin, or itraconazole, based on consideration of their contraindications, cautions and drug interactions. Oral fluconazole and oral ketoconazole are not recommended. Terbinafine is generally better tolerated and has fewer interactions than griseofulvin and itraconazole, but it is not suitable for all people (such as children and people with chronic or active liver disease).

Question 115

A 33-year-old man presented with dyspepsia and, on serological testing, was found to have Helicobacter pylori infection.

With which condition is H. pylori infection most strongly associated?

- A: duodenal ulcer ○
- B: gastric carcinoma ○
- C: gastric ulcer ○
- D: gastro-oesophageal reflux ○
- E: non-ulcer dyspepsia ○

Question 115

Next Question

Question 115

No Answer Given

Incorrect

A 33-year-old man presented with dyspepsia and, on serological testing, was found to have Helicobacter pylori infection.

With which condition is H. pylori infection most strongly associated?

Answers

A: duodenal ulcer
B: gastric carcinoma
C: gastric ulcer
D: gastro-oesophageal reflux
E: non-ulcer dyspepsia

Correct answer: A

Explanation

Duodenal ulcers have a strong association with Helicobacter pylori, with over 90% of patients with duodenal ulcers being H. pylori positive. There is also an association with gastric ulceration and carcinoma but to a lesser degree. Gastro-oesophageal reflux is not particularly associated with H. pylori since infection tends to reduce gastric acid secretion. Non-ulcer dyspepsia can occur with H. pylori but the association is more complex and the conditions do not always co-exist.

Question 116

A 43-year-old man, who had recently emigrated from Bangladesh, presented with a 3-month history of breathlessness and productive cough, which had markedly worsened over the past week.

On examination, his pulse was 105 beats/min and his BP was 95/54 mmHg. His JVP was 6 cm above the sternal angle. Coarse crackles were heard in the right upper zone.

Investigations:

echocardiogram	5-cm pericardial effusion with diastolic collapse of right atrium and right ventricle

What is the most likely abnormality to be found in his pulse?

A: anacrotic pulse ○

B: collapsing pulse ○

C: pulsus alternans ○

D: pulsus bisferiens ○

E: pulsus paradoxus ○

Question 116 ⌄

Next Question

Question 116

No Answer Given

Incorrect

A 43-year-old man, who had recently emigrated from Bangladesh, presented with a 3-month history of breathlessness and productive cough, which had markedly worsened over the past week.

On examination, his pulse was 105 beats/min and his BP was 95/54 mmHg. His JVP was 6 cm above the sternal angle. Coarse crackles were heard in the right upper zone.

Investigations:

echocardiogram	5-cm pericardial effusion with diastolic collapse of right atrium and right ventricle

What is the most likely abnormality to be found in his pulse?

Answers

A: anacrotic pulse
B: collapsing pulse
C: pulsus alternans
D: pulsus bisferiens
E: pulsus paradoxus

Correct answer: E

Explanation

Anacrotic pulse: a low-volume pulse seen in patients with aortic stenosis.

Collapsing pulse: a finding in patients with moderate-to-severe aortic regurgitation.

Pulsus alternans: usually found in severe left ventricular dysfunction as a result of cardiomyopathy, coronary artery disease, systemic hypertension, and aortic stenosis.

Pulsus bisferiens: a finding in patients with moderate-to-severe aortic regurgitation; also occurs in patients with combined aortic stenosis and regurgitation.

Pulsus paradoxus: this is the only sign that would fit with the clinical scenario of a patient who is likely to have tamponade.

Question 117

A 75-year-old woman presented following an impulsive overdose of three times her normal daily dose of warfarin. Her husband had died 4 years previously. She did not normally drink much alcohol, but had consumed 6 units on the day of the overdose.

What is most predictive of completed suicide in the next week?

A: age over 70 years ○

B: alcohol consumption ○

C: amount of warfarin taken ○

D: female sex ○

E: loss of husband ○

Question 117

No Answer Given

Incorrect

A 75-year-old woman presented following an impulsive overdose of three times her normal daily dose of warfarin. Her husband had died 4 years previously. She did not normally drink much alcohol, but had consumed 6 units on the day of the overdose.

What is most predictive of completed suicide in the next week?

Answers

A: age over 70 years
B: alcohol consumption
C: amount of warfarin taken
D: female sex
E: loss of husband

Correct answer: A

Explanation

The risk factors for completed suicide are male rather than female; older age is a strong risk factor, alcohol is associated with both attempted and completed suicide, but not as great a risk as this patient’s age. The amount of tablets is a poor indicator, as it depends on what the patient believed would be the outcome of the overdose. Bereavement alone is not a strong risk factor.

Question 118

A 55-year-old man presented after a recent myocardial infarction. He was concerned about the risk to other family members after reading a newspaper article about association studies that mentioned ischaemic heart disease and single nucleotide polymorphism (SNP) genotyping.

What is the most appropriate definition of an SNP?

- A: alteration in nucleotide sequence that causes a change in amino acid sequence ○
- B: alteration in nucleotide sequence that does not cause a change in amino acid sequence ○
- C: deletion of a single nucleotide ○
- D: repetition of a nucleotide two or more times ○
- E: substitution of a nucleotide for any other nucleotide ○

Question 118

No Answer Given

Incorrect

A 55-year-old man presented after a recent myocardial infarction. He was concerned about the risk to other family members after reading a newspaper article about association studies that mentioned ischaemic heart disease and single nucleotide polymorphism (SNP) genotyping.

What is the most appropriate definition of an SNP?

Answers

A: alteration in nucleotide sequence that causes a change in amino acid sequence
B: alteration in nucleotide sequence that does not cause a change in amino acid sequence
C: deletion of a single nucleotide
D: repetition of a nucleotide two or more times
E: substitution of a nucleotide for any other nucleotide

Correct answer: E

Explanation

Single nucleotide polymorphisms (SNPs) are the most common type of genetic variation. They are most commonly found in non-coding DNA between genes. SNPs in regulatory or coding regions of DNA are more clinically significant.

Question 119

An 83-year-old man presented with a 6-month history of pain in both legs on walking, which was relieved by a short period of rest, particularly sitting down. He had a past history of myocardial infarction.

On examination, his foot pulses were present. There was crepitus in both knees and both ankle tendon reflexes were absent.

What is the most likely cause of his symptoms?

A: osteoarthritis of the knees ○

B: peripheral arterial disease ○

C: peripheral polyneuropathy ○

D: spinal stenosis ○

E: venous insufficiency ○

Question 119

Next Question

Question 119

No Answer Given

Incorrect

An 83-year-old man presented with a 6-month history of pain in both legs on walking, which was relieved by a short period of rest, particularly sitting down. He had a past history of myocardial infarction.

On examination, his foot pulses were present. There was crepitus in both knees and both ankle tendon reflexes were absent.

What is the most likely cause of his symptoms?

Answers

A: osteoarthritis of the knees
B: peripheral arterial disease
C: peripheral polyneuropathy
D: spinal stenosis
E: venous insufficiency

Correct answer: D

Explanation

This question is testing the knowledge of the candidate regarding claudication pain in the legs. The commonest cause is vascular claudication. The confounder here is the history of myocardial infarction, indicating a high risk for macrovascular disease. Clinical examination confirms that feet pulses rule out a vascular cause of claudication. The correct answer is spinal stenosis, which can mimic vascular claudication. Nerve pressure is dynamic and hence symptoms resolve with rest. For the same reason, neurological examination can be normal. Osteoarthritis, peripheral neuropathy and venous insufficiency do not cause claudication.

Question 120

A 24-year-old man presented with a 2-week history of leg swelling. He had experienced an upper respiratory tract infection 1 month previously, but had not required antibiotic therapy. He had no significant medical history. A maternal uncle had undergone a successful kidney transplant.

On examination, there was peripheral oedema to the thighs bilaterally. Urinalysis showed blood 1+, protein 4+.

Investigations:

serum urea	6.6 mmol/L (2.5–7.0)
serum creatinine	102 µmol/L (60–110)
eGFR (CKD-EPI)	>60 mL/min/1.73 m^2 (>60)
serum albumin	22 g/L (37–49)

What is the most likely diagnosis?

A: Alport syndrome ○

B: autosomal dominant polycystic kidney disease ○

C: IgA nephropathy ○

D: membranoproliferative glomerulonephritis ○

E: minimal change disease ○

Question 120 ⌄

Next Question

Question 120

No Answer Given

Incorrect

A 24-year-old man presented with a 2-week history of leg swelling. He had experienced an upper respiratory tract infection 1 month previously, but had not required antibiotic therapy. He had no significant medical history. A maternal uncle had undergone a successful kidney transplant.

On examination, there was peripheral oedema to the thighs bilaterally. Urinalysis showed blood 1+, protein 4+.

Investigations:

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serum creatinine	102 μmol/L (60–110)
eGFR (CKD-EPI)	>60 mL/min/1.73 m^2 (>60)
serum albumin	22 g/L (37–49)

What is the most likely diagnosis?

Answers

A: Alport syndrome
B: autosomal dominant polycystic kidney disease
C: IgA nephropathy
D: membranoproliferative glomerulonephritis
E: minimal change disease

Correct answer: E

Explanation

This patient has nephrotic syndrome (characterised by the triad of oedema, proteinuria (>3g/24h) and hypoalbuminaemia). Of the options listed, minimal change disease is the most likely cause of nephrotic syndrome in this patient. A trigger, such as a viral respiratory tract infection, can occur before the acute presentation.

IgA nephropathy and membranoproliferative glomerulonephritis can present with nephrotic syndrome, although these diseases much more commonly present with progressive renal impairment and haematuria with non-nephrotic proteinuria. Minimal change disease is a much more common cause of nephrotic syndrome than these disorders.

Autosomal dominant polycystic kidney disease and Alport syndrome are respectively, the first and second, most common hereditary kidney diseases. They are not causes of nephrotic syndrome and so are not correct options.

Question 121

A 42-year-old woman was referred following a health check. She was asymptomatic but had been found to have hyponatraemia. She had a history of gastrooesophageal reflux treated with omeprazole.

On examination, she had no postural drop in BP.

Investigations:

serum sodium	131 mmol/L (137–144)
serum potassium	4.5 mmol/L (3.5–4.9)
serum creatinine	88 μmol/L (60–110)
random plasma glucose	4.6 mmol/L (3.0–11.0)
serum osmolality	271 mosmol/kg (278–300)
urine osmolality	735 mosmol/kg (100–1000)
urinary sodium	36 mmol/L
serum cortisol (09.00 h)	524 nmol/L (320–700)

What additional information would be most useful to support a diagnosis of syndrome of inappropriate antidiuretic hormone?

A: daily fluid intake ○

B: daily urine output ○

C: no further information needed ○

D: serum cholesterol levels ○

E: thyroid function tests ○

Question 121

No Answer Given

Incorrect

A 42-year-old woman was referred following a health check. She was asymptomatic but had been found to have hyponatraemia. She had a history of gastrooesophageal reflux treated with omeprazole.

On examination, she had no postural drop in BP.

Investigations:

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urine osmolality	735 mosmol/kg (100–1000)
urinary sodium	36 mmol/L
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What additional information would be most useful to support a diagnosis of syndrome of inappropriate antidiuretic hormone?

Answers

A: daily fluid intake
B: daily urine output
C: no further information needed
D: serum cholesterol levels
E: thyroid function tests

Correct answer: E

Explanation

This case highlights the likelihood and diagnosis of SIADH. This is a diagnosis made once other causes of hyponatraemia are ruled out such as hypocortisolaemia, thyroid dysfunction (hypothyroidism) and adequate renal function. A Sosm <280 with UNa>20 and Uosm >100 are suggestive of SIADH. Daily fluid intake or daily urine output whilst useful in management and history, would not be beneficial to make a diagnosis of SIADH. Serum cholesterol levels are useful in pseudohyponatraemia but not in the case of SIADH. A normal normal TFT would reassure no other cause of hyponatraemia, and with the other investigations, aid the diagnosis of SIADH, therefore it is the correct answer.

Question 122
Next Question

Question 122

A 19-year-old man presented with a 6-month history of increasing social withdrawal, having become convinced that he could hear his innermost thoughts being spoken by people whose voices he did not recognise. He spent hours pacing about in his room. Substance misuse was excluded and a diagnosis of schizophrenia was made. He was treated with risperidone.

What receptors are chiefly involved in mediating the antipsychotic effects of risperidone?

A: alpha-adrenoceptor (α_1) ○

B: dopamine (D_2) ○

C: histamine (H_1) ○

D: muscarinic (M_1) ○

E: serotonin ($5\text{-}HT_2$) ○

Question 122

No Answer Given

Incorrect

A 19-year-old man presented with a 6-month history of increasing social withdrawal, having become convinced that he could hear his innermost thoughts being spoken by people whose voices he did not recognise. He spent hours pacing about in his room. Substance misuse was excluded and a diagnosis of schizophrenia was made. He was treated with risperidone.

What receptors are chiefly involved in mediating the antipsychotic effects of risperidone?

Answers

A: alpha-adrenoceptor (α_1)
B: dopamine (D_2)
C: histamine (H_1)
D: muscarinic (M_1)
E: serotonin ($5\text{-}HT_2$)

Correct answer: B

Explanation

The primary mechanism of action of antipsychotic drugs is dopamine receptor antagonism.

Question 123

A 68-year-old woman with atrial fibrillation presented for DC cardioversion. The procedure resulted in successful restoration of sinus rhythm.

Which drug would be most likely to maintain sinus rhythm following this procedure?

A: amiodarone ○

B: digoxin ○

C: diltiazem ○

D: sotalol ○

E: verapamil ○

Question 123 ⌄ Next Question

Question 123

No Answer Given

Incorrect

A 68-year-old woman with atrial fibrillation presented for DC cardioversion. The procedure resulted in successful restoration of sinus rhythm.

Which drug would be most likely to maintain sinus rhythm following this procedure?

Answers

A: amiodarone
B: digoxin
C: diltiazem
D: sotalol
E: verapamil

Correct answer: A

Explanation

Class IA (disopyramide phosphate, quinidine sulfate), Class IC (flecainide acetate, propafenone hydrochloride) and Class III (amiodarone, dofetilide, dronedarone, sotalol hydrochloride) drugs reduce recurrence of atrial fibrillation. Amiodarone and propafenone are superior to sotalol in maintaining long-term normal sinus rhythm in patients with atrial fibrillation. Amiodarone is superior to propafenone. All but amiodarone and propafenone increases pro-arrhythmia.

Question 124

A 79-year-old man with renal cell carcinoma, with metastases involving his lungs and liver, was treated with morphine sulfate for pain control, and clarithromycin for a respiratory infection.

Investigations:

serum urea	18.0 mmol/L (2.5–7.0)
serum creatinine	200 µmol/L (60–110)
serum albumin	28 g/L (37–49)
serum total bilirubin	20 µmol/L (1–22)
serum alanine aminotransferase	300 U/L (5–35)
serum alkaline phosphatase	1050 U/L (45–105)

What is most likely to cause morphine toxicity in this patient?

A: cholestasis ○

B: decreased plasma protein binding ○

C: hepatocellular dysfunction ○

D: renal impairment ○

E: treatment with clarithromycin ○

Question 124

No Answer Given

Incorrect

A 79-year-old man with renal cell carcinoma, with metastases involving his lungs and liver, was treated with morphine sulfate for pain control, and clarithromycin for a respiratory infection.

Investigations:

serum urea	18.0 mmol/L (2.5–7.0)
serum creatinine	200 μmol/L (60–110)
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serum total bilirubin	20 μmol/L (1–22)
serum alanine aminotransferase	300 U/L (5–35)
serum alkaline phosphatase	1050 U/L (45–105)

What is most likely to cause morphine toxicity in this patient?

Answers

A: cholestasis
B: decreased plasma protein binding
C: hepatocellular dysfunction
D: renal impairment
E: treatment with clarithromycin

Correct answer: D

Explanation

Morphine is metabolised to active glucuronide metabolites, which are excreted renally. Renal impairment leads to accumulation of morphine-6-glucuronide, which is a potent opioid agonist with a higher affinity than morphine.

Question 125

A 32-year-old man presented with weight loss and feeling generally unwell. On direct questioning, he had been having dizzy spells, especially on sudden changes in posture.

On examination, he was tanned. There was a postural drop in his BP.

What is the most likely biochemical finding?

- A: 24-h urinary free cortisol 60 nmol (55–250) ○
- B: fasting plasma glucose 3.2 mmol/L (3.0–6.0) ○
- C: plasma adrenocorticotropic hormone 95 pmol/L (3.3–15.4) ○
- D: serum potassium 4.6 mmol/L (3.5–4.9) ○
- E: serum sodium 148 mmol/L (137–144) ○

Question 125 ⌄ Next Question

Question 125

No Answer Given

Incorrect

A 32-year-old man presented with weight loss and feeling generally unwell. On direct questioning, he had been having dizzy spells, especially on sudden changes in posture.

On examination, he was tanned. There was a postural drop in his BP.

What is the most likely biochemical finding?

Answers

A: 24-h urinary free cortisol 60 nmol (55–250)
B: fasting plasma glucose 3.2 mmol/L (3.0–6.0)
C: plasma adrenocorticotropic hormone 95 pmol/L (3.3–15.4)
D: serum potassium 4.6 mmol/L (3.5–4.9)
E: serum sodium 148 mmol/L (137–144)

Correct answer: C

Explanation

The clinical picture is compatible with primary adrenal failure. In a young person, Addison’s disease is the most likely cause. The adrenocorticotropic hormone (ACTH) will be raised in the absence of negative feedback due to cortisol deficiency.

Question 126

A 45-year-old man presented with a 2-year history of fatigue, 4-kg weight loss and pruritus. He also complained of longstanding diarrhoea with the occasional passage of blood. He had drunk 20 units of alcohol per week for many years.

On examination, he was mildly jaundiced.

Investigations:

serum albumin	38 g/L (37–49)
serum total bilirubin	95 µmol/L (1–22)
serum alanine aminotransferase	50 U/L (5–35)
serum alkaline phosphatase	315 U/L (45–105)

What is the most likely diagnosis?

A: alcoholic hepatitis ○

B: cholelithiasis ○

C: pancreatic cancer ○

D: primary biliary cholangitis ○

E: primary sclerosing cholangitis ○

Question 126 ⌄

Next Question

Question 126

No Answer Given

Incorrect

A 45-year-old man presented with a 2-year history of fatigue, 4-kg weight loss and pruritus. He also complained of longstanding diarrhoea with the occasional passage of blood. He had drunk 20 units of alcohol per week for many years.

On examination, he was mildly jaundiced.

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serum total bilirubin	95 μmol/L (1–22)
serum alanine aminotransferase	50 U/L (5–35)
serum alkaline phosphatase	315 U/L (45–105)

What is the most likely diagnosis?

Answers

A: alcoholic hepatitis
B: cholelithiasis
C: pancreatic cancer
D: primary biliary cholangitis
E: primary sclerosing cholangitis

Correct answer: E

Explanation

The history suggests underlying undiagnosed ulcerative colitis, which is often associated with primary sclerosing cholangitis (PSC), which tends to present with cholestatic derangement of liver function tests and pruritus and fatigue. The alcohol history is not adequate to cause alcoholic hepatitis. Primary biliary cholangitis is much rarer in males. Cholelithiasis and pancreatic cancer are less likely with the history of painless jaundice given.

Question 127

A 68-year-old man was advised to take isosorbide mononitrate 30 mg twice daily for angina pectoris.

What is the most important mechanism of action of this drug?

- A: calcium channel blockade ○
- B: increased cyclic adenosine monophosphate production ○
- C: increased cyclic guanosine monophosphate production ○
- D: potassium channel activation ○
- E: sodium channel blockade ○

Question 127

No Answer Given

Incorrect

A 68-year-old man was advised to take isosorbide mononitrate 30 mg twice daily for angina pectoris.

What is the most important mechanism of action of this drug?

Answers

A: calcium channel blockade
B: increased cyclic adenosine monophosphate production
C: increased cyclic guanosine monophosphate production
D: potassium channel activation
E: sodium channel blockade

Correct answer: C

Explanation

Isosorbide mononitrate act as a nitric oxide (NO) donor, leading to stimulation of guanylate cyclase to produce cyclic guanosine monophosphate (GMP), which mediates the vasodilatory effect of nitrates.

Question 128

A 25-year-old man presented with a 5-day history of foul-smelling diarrhoea, abdominal pain, nausea, bloating and flatulence. He had returned from a holiday in Borneo 1 week previously.

On examination, he appeared dehydrated. Examination was otherwise normal.

Investigations:

stool microscopy	motile trophozoites and cysts

What is the most likely causative organism?

A: Campylobacter jejuni ○

B: Cryptosporidium parvum ○

C: Escherichia coli O157 ○

D: Giardia intestinalis ○

E: Shigella dysenteriae ○

Question 128 ⌄

Next Question

Question 128

No Answer Given

Incorrect

A 25-year-old man presented with a 5-day history of foul-smelling diarrhoea, abdominal pain, nausea, bloating and flatulence. He had returned from a holiday in Borneo 1 week previously.

On examination, he appeared dehydrated. Examination was otherwise normal.

Investigations:

stool microscopy	motile trophozoites and cysts

What is the most likely causative organism?

Answers

A: Campylobacter jejuni
B: Cryptosporidium parvum
C: Escherichia coli O157
D: Giardia intestinalis
E: Shigella dysenteriae

Correct answer: D

Explanation

Although the commonest cause of infective diarrhoea is campylobacter, the history of small bowel malabsorptive symptoms and of travel to an endemic area is suggestive of giardiasis. This is confirmed by the finding of trophozoites and cysts on microscopy. Cryptosporidiosis is less common and would only show cysts on microscopy.

Question 129

A 47-year-old man with a history of long QT syndrome presented with a 2-day history of a productive cough and rigors.

He was found to have left lower lobe pneumonia.

Which antibiotic is most likely to further prolong his QT interval?

- A: amoxicillin ○
- B: ceftriaxone ○
- C: clarithromycin ○
- D: co-amoxiclav ○
- E: doxycycline ○

Question 129
Next Question

Question 129

No Answer Given

Incorrect

A 47-year-old man with a history of long QT syndrome presented with a 2-day history of a productive cough and rigors.

He was found to have left lower lobe pneumonia.

Which antibiotic is most likely to further prolong his QT interval?

Answers

A: amoxicillin
B: ceftriaxone
C: clarithromycin
D: co-amoxiclav
E: doxycycline

Correct answer: C

Explanation

Antimicrobials that cause QT prolongation are: erythromycin, clarithromycin, moxifloxacin, fluconazole and ketoconazole.

Doxycycline is an alternative therapy which does not cause QT prolongation so would be safe to use for this patient.

Question 130

A 68-year-old man was taking long-term warfarin for atrial fibrillation and his INR was stable at 2.8.

Which coagulation factor is most likely to be present at a reduced activity?

A: factor V ○

B: factor VII ○

C: factor VIII ○

D: factor XII ○

E: fibrinogen ○

Question 130
Next Question

Question 130

No Answer Given

Incorrect

A 68-year-old man was taking long-term warfarin for atrial fibrillation and his INR was stable at 2.8.

Which coagulation factor is most likely to be present at a reduced activity?

Answers

A: factor V
B: factor VII
C: factor VIII
D: factor XII
E: fibrinogen

Correct answer: B

Explanation

Warfarin inhibits the vitamin K-dependent synthesis of clotting factors including factor II, VII, IX and X as well as the regulatory factors protein C and protein S. Therefore, factor VII is the correct answer.

Question 131

A 53-year-old woman presented with a painful right ankle and was found to have a partial lower tibial fracture.

Investigations:

serum creatinine	122 μmol/L (60–110)
serum adjusted calcium	2.05 mmol/L (2.20–2.60)
serum phosphate	0.60 mmol/L (0.80–1.45)
serum alkaline phosphatase	180 U/L (45–105)
plasma parathyroid hormone	5.6 pmol/L (0.9–5.4)
serum 25-OH-cholecalciferol	32 nmol/L (50–120)

What is the most appropriate treatment?

A: alendronic acid ○

B: calcium supplementation ○

C: colecalciferol ○

D: pamidronate disodium ○

E: phosphate supplementation ○

Question 131 ⌄

Next Question

Question 131

No Answer Given

Incorrect

A 53-year-old woman presented with a painful right ankle and was found to have a partial lower tibial fracture.

Investigations:

serum creatinine	122 µmol/L (60–110)
serum adjusted calcium	2.05 mmol/L (2.20–2.60)
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plasma parathyroid hormone	5.6 pmol/L (0.9–5.4)
serum 25-OH-cholecalciferol	32 nmol/L (50–120)

What is the most appropriate treatment?

Answers

A: alendronic acid
B: calcium supplementation
C: colecalciferol
D: pamidronate disodium
E: phosphate supplementation

Correct answer: C

Explanation

This clinical picture is due to vitamin D deficiency leading to bone fracture. Treatment of choice is vitamin D replacement.

Question 132

A 43-year-old woman presented with a 2-month history of progressive muscle weakness and shortness of breath.

On examination, there was proximal limb weakness, and crackles at both lung bases.

Investigations:

ESR	55 mm/1st h (<20)
serum creatine kinase	3500 U/L (24–170)

What is the most likely diagnosis?

- A: chronic inflammatory demyelinating polyneuropathy ○
- B: inclusion body myositis ○
- C: myasthenia gravis ○
- D: polymyalgia rheumatica ○
- E: polymyositis ○

Question 132 ⌄ Next Question

Question 132

No Answer Given

Incorrect

A 43-year-old woman presented with a 2-month history of progressive muscle weakness and shortness of breath.

On examination, there was proximal limb weakness, and crackles at both lung bases.

Investigations:

ESR	55 mm/1st h (<20)
serum creatine kinase	3500 U/L (24–170)

What is the most likely diagnosis?

Answers

- A: chronic inflammatory demyelinating polyneuropathy
- B: inclusion body myositis
- C: myasthenia gravis
- D: polymyalgia rheumatica
- E: polymyositis

Correct answer: E

Explanation

This is a classic description of polymyositis. There is a short history of progressive proximal muscle weakness without sensory impairment and examination findings are consistent with interstitial lung disease. Her serum creatine kinase (CK) is moderately elevated with a high ESR showing an inflammatory cause. Polymyalgia rheumatica (PMR) should not be diagnosed in people below 50 years of age, is not associated with such an elevated CK and usually has pain and stiffness as a predominant feature. Myasthenia gravis causes diurnal variation in weakness, worsening with activity and improving with rest, and often facial involvement. Chronic inflammatory demyelinating polyneuropathy (CIDP) would usually be expected to cause loss of motor as well as sensory nerve function with loss of deep tendon reflexes. Sporadic inclusion body myositis is the commonest acquired myopathy in those over 50, so the patient is a little young, and is not associated with pneumonitis and usually affects both proximal and distal muscles, particularly the wrist and finger flexors. CIDP, PMR and myasthenia gravis do not cause such high CK levels.

Question 133

A 55-year-old woman presented with a 2-month history of lower back pain, for which she had been taking paracetamol 4 g daily. She admitted to drinking 16 units of alcohol per week.

On examination, her BMI was 24.0 kg/m^2 (18.0–25.0).

Investigations:

serum alanine aminotransferase	55 U/L (5–35)
serum aspartate aminotransferase	29 U/L (1–31)
serum alkaline phosphatase	90 U/L (45–105)

serum IgG	21.0 g/L (6.0–13.0)
serum IgA	2.4 g/L (0.8–3.0)
serum IgM	1.8 g/L (0.4–2.5)

What is the most likely cause of her abnormal liver function tests?

A: alcohol ○

B: autoimmune hepatitis ○

C: drug related ○

D: gallstones ○

E: primary biliary cholangitis ○

Question 133 ⌄

Next Question

Question 133

No Answer Given

Incorrect

A 55-year-old woman presented with a 2-month history of lower back pain, for which she had been taking paracetamol 4 g daily. She admitted to drinking 16 units of alcohol per week.

On examination, her BMI was 24.0 kg/m^2 (18.0–25.0).

Investigations:

serum alanine aminotransferase	55 U/L (5–35)
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serum IgG	21.0 g/L (6.0–13.0)
serum IgA	2.4 g/L (0.8–3.0)
serum IgM	1.8 g/L (0.4–2.5)

What is the most likely cause of her abnormal liver function tests?

Answers

A: alcohol
B: autoimmune hepatitis
C: drug related
D: gallstones
E: primary biliary cholangitis

Correct answer: B

Explanation

The raised IgG levels suggests autoimmune hepatitis and a diagnosis can be provisionally made while awaiting the autoantibody profile. The ratio of alanine aminotransferase (ALT) to aspartate aminotransferase (AST) is greater than 1, which favours autoimmune or viral over alcoholic cause. The alcohol consumption is not adequate to cause liver disease, nor is the level of paracetamol use, which is rarely associated with chronic liver disease. Primary biliary cholangitis is associated with elevated IgM levels. There is no history of pain to suggest gallstones, which in any case should not cause an elevation of IgG levels.

Question 134

A 58-year-old man had a 3-day history of cough, breathlessness, and fever. He had a history of ischaemic heart disease and type 2 diabetes mellitus.

On examination, he was slightly confused. His pulse was 105 beats/min, his BP was 112/75 mmHg and his respiratory rate was 24 breaths/min. Chest auscultation showed bronchial breathing at the right base with coarse crackles.

Investigations:

white cell count	18.0 × 10^9/L (4.0–11.0)
serum urea	7.5 mmol/L (2.5–7.0)
serum creatinine	122 μmol/L (60–110)
random plasma glucose	12.0 mmol/L (3.0–11.0)
chest X-ray	right lower zone consolidation

What is the most appropriate initial course of action?

- A: admit to high-dependency unit ○
- B: admit to medical ward ○
- C: discharge with a course of oral antibiotics ○
- D: monitor in the intensive care unit ○
- E: outpatient ambulatory management with intravenous antibiotics ○

Question 134

No Answer Given

Incorrect

A 58-year-old man had a 3-day history of cough, breathlessness, and fever. He had a history of ischaemic heart disease and type 2 diabetes mellitus.

On examination, he was slightly confused. His pulse was 105 beats/min, his BP was 112/75 mmHg and his respiratory rate was 24 breaths/min. Chest auscultation showed bronchial breathing at the right base with coarse crackles.

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serum creatinine	122 µmol/L (60–110)
random plasma glucose	12.0 mmol/L (3.0–11.0)
chest X-ray	right lower zone consolidation

What is the most appropriate initial course of action?

Answers

A: admit to high-dependency unit
B: admit to medical ward
C: discharge with a course of oral antibiotics
D: monitor in the intensive care unit
E: outpatient ambulatory management with intravenous antibiotics

Correct answer: B

Explanation

This question relates to the scoring of severity of community-acquired pneumonia. There is a short history of cough, breathlessness and fever, and examination findings are consistent with pneumonia. His chest X-ray confirms the presence of consolidation, which makes community-acquired pneumonia the most likely diagnosis. Candidates are expected to be aware of the CURB-65 severity score and to apply it to this case. Here, there is a description of confusion in the history giving 1 point for this, a raised urea of 7.5, but the patient does not have a respiratory rate of greater than 30 breaths/min or a BP of less than systolic BP <90 mmHg or diastolic BP of <60 mmHg. The patient is under the age of 65 so does not score for this either. Thus, the total CURB-65 score is 2. This score is related to a 30-day mortality risk around 9% and it is advised that management should be hospital admission. A score of 3 or more would suggest a higher level of care may be required. A score of 0 or 1 would suggest that admission is not likely to be required (unless for social reasons or unstable comorbid illness) and that oral antibiotics can be used. Intravenous antibiotics would only be used as an outpatient when oral administration was not possible.
Reference: BTS guidelines for the Management of Community Acquired Pneumonia in Adults. Thorax 56 Suppl 4:IV;1-64

Question 135

A 61-year-old man was referred for investigation of persistent isolated non-visible haematuria.

On examination, his BP was 121/76 mmHg. Urinalysis showed blood 2+.

Investigations:

haemoglobin	160 g/L (130–180)
white cell count	12.5 × 109/L (4.0–11.0)
serum creatinine	63 µmol/L (60–110)
eGFR (CKD-EPI)	>60 mL/min/1.73 m^2 (>60)
ultrasound scan of abdomen	two normal-sized, non-obstructed kidneys

What is the most appropriate next investigation?

- A: ANCA ○
- B: CT urography ○
- C: cystoscopy ○
- D: renal biopsy ○
- E: serum IgA concentration ○

Question 135

No Answer Given

Incorrect

A 61-year-old man was referred for investigation of persistent isolated non-visible haematuria.

On examination, his BP was 121/76 mmHg. Urinalysis showed blood 2+.

Investigations:

haemoglobin	160 g/L (130–180)
white cell count	12.5 × 109/L (4.0–11.0)
serum creatinine	63 μmol/L (60–110)
eGFR (CKD-EPI)	>60 mL/min/1.73 m^2 (>60)
ultrasound scan of abdomen	two normal-sized, non-obstructed kidneys

What is the most appropriate next investigation?

Answers

A: ANCA
B: CT urography
C: cystoscopy
D: renal biopsy
E: serum IgA concentration

Correct answer: C

Explanation

The NICE guidelines suggest that in people over the age of 60 with non-visible haematuria and dysuria or a raised white cell count on a blood test should be investigated for urological cancer with renal tract imaging and a cystoscopy. There are no other features of vasculitis to support sending an ANCA test. He has already had a renal tract ultrasound and no other risk factors for urological malignancy have been given in the stem thus he does not require a CT urography. There is no indication for a renal biopsy with normal BP, renal function and no proteinuria on dipstick. IgA nephropathy is a possibility, but the most appropriate next test is cystoscopy. It is worth noting that the NICE guidelines changed in 2015 so that isolated asymptomatic non-visible haematuria no longer needs a 2-week wait referral at any age as the positive predictive value for cancer is <1%.

Question 136

A 54-year-old woman presented with a 3-hour history of severe anterior chest pain.

Investigations:

ECG	3-mm ST-segment depression in leads V_1 to V_3, with upright T waves and tall R waves

A diagnosis of acute myocardial infarction was made and she was referred for primary percutaneous coronary intervention.

Which coronary artery is most likely to be involved?

A: circumflex ○

B: first septal branch of the left anterior descending ○

C: left main stem ○

D: mid-left anterior descending ○

E: proximal left anterior descending ○

Question 136

Next Question

Question 136

No Answer Given

Incorrect

A 54-year-old woman presented with a 3-hour history of severe anterior chest pain.

Investigations:

ECG	3-mm ST-segment depression in leads V_1 to V_3, with upright T waves and tall R waves

A diagnosis of acute myocardial infarction was made and she was referred for primary percutaneous coronary intervention.

Which coronary artery is most likely to be involved?

Answers

A: circumflex
B: first septal branch of the left anterior descending
C: left main stem
D: mid-left anterior descending
E: proximal left anterior descending

Correct answer: A

Explanation

This question is testing knowledge of coronary anatomy and corresponding ECG changes. The patient is having a posterior ST-elevation myocardial infarction (STEMI), as noted by the fact there is a dominant R wave in V1–3 and ST depression, which, if posterior leads were applied, it would show ST elevation and Q waves in V1–3 e.g. a mirror image. It is the circumflex that supplies the posterior surface of the heart, via the posterior descending artery in around 15% of people, called a left dominant system; in 85% of people, the posterior descending artery arises from the right coronary artery, called a right dominant system. Of the answers listed, it is only a lesion in the circumflex that could produce these changes, the right coronary artery is not listed as an option; therefore, the answer is circumflex. Of the other answers, first septal branch of the left anterior descending would lead to ST elevation in I and aVL alone; left main stem would lead to widespread ST elevation in most, if not all, leads (or possible ST elevation in aVR and ST depression in the anterior leads); mid-left anterior descending and proximal left anterior descending would lead to anterior ST elevation, in V2-6 and V1-4 ,respectively.

Question 137

A 42-year-old woman presented complaining of “worms” in the skin of her arms and legs for the past 9 months. She could feel the worms moving, and had tried to get them out of her skin using a needle. She reported that the worms were gradually spreading and she was afraid they would lead to her death.

On examination, she was anxious. There were multiple needle marks on the skin of her arms and legs. Examination was otherwise normal.

What is the most likely diagnosis?

A: delusional disorder ○

B: depressive psychosis ○

C: factitious disorder ○

D: generalised anxiety disorder ○

E: somatic symptom disorder ○

Question 137 ⌄

Next Question

Question 137

No Answer Given

Incorrect

A 42-year-old woman presented complaining of “worms” in the skin of her arms and legs for the past 9 months. She could feel the worms moving, and had tried to get them out of her skin using a needle. She reported that the worms were gradually spreading and she was afraid they would lead to her death.

On examination, she was anxious. There were multiple needle marks on the skin of her arms and legs. Examination was otherwise normal.

What is the most likely diagnosis?

Answers

A: delusional disorder
B: depressive psychosis
C: factitious disorder
D: generalised anxiety disorder
E: somatic symptom disorder

Correct answer: A

Explanation

Delusional parasitosis is a form of delusional disorder; the thought of death and some anxiety are secondary and not the primary issue. Factitious disorder is the conscious production of symptoms for psychological gain, which there is no evidence for in the question. Somatic symptom disorder, with physical symptoms unrelated or out of proportion to underlying medical pathology, is a possible answer but the classic description and intensity of belief around parasites makes delusional disorder correct.

Question 138

A 32-year-old man with chronic hepatitis C virus infection was being treated with directly acting antiviral medication.

What investigation is most appropriate for assessing his sustained response to treatment?

A: anti-hepatitis C antibody concentration ○

B: HCV viral load ○

C: liver biopsy ○

D: serum alanine aminotransferase ○

E: serum CRP concentration ○

Question 138

Next Question

Question 138

No Answer Given

Incorrect

A 32-year-old man with chronic hepatitis C virus infection was being treated with directly acting antiviral medication.

What investigation is most appropriate for assessing his sustained response to treatment?

Answers

A: anti-hepatitis C antibody concentration
B: HCV viral load
C: liver biopsy
D: serum alanine aminotransferase
E: serum CRP concentration

Correct answer: B

Explanation

International guidance for monitoring response to treatment of hepatitis C is by finding a sustained virological response using HCV viral load.

Question 139

A 67-year-old woman presented with palpitations and a goitre. Propranolol was started to improve her symptoms.

On examination, she had a coarse tremor and sweaty palms, but no thyroid eye signs.

Investigations:

serum thyroid-stimulating hormone	<0.03 mU/L (0.4–5.0)
serum free T4	25.0 pmol/L (10.0–22.0)
technetium-99m scan of thyroid	increased uptake in right upper lobe, with uptake suppressed in rest of thyroid gland

What is the most appropriate treatment for her thyroid condition?

A: carbimazole ○

B: prednisolone ○

C: propylthiouracil ○

D: radioiodine ○

E: total thyroidectomy ○

Question 139

No Answer Given

Incorrect

A 67-year-old woman presented with palpitations and a goitre. Propranolol was started to improve her symptoms.

On examination, she had a coarse tremor and sweaty palms, but no thyroid eye signs.

Investigations:

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serum free T4	25.0 pmol/L (10.0–22.0)
technetium-99m scan of thyroid	increased uptake in right upper lobe, with uptake suppressed in rest of thyroid gland

What is the most appropriate treatment for her thyroid condition?

Answers

A: carbimazole
B: prednisolone
C: propylthiouracil
D: radioiodine
E: total thyroidectomy

Correct answer: D

Explanation

This case highlights the treatment of an autonomous nodule causing hyperthyroidism (‘toxic adenoma’). Given that she is started on beta-adrenoceptor blockade, her sympathetic symptoms will be controlled. The technetium-99m scan highlights the focus of overactivity and does not suggest thyroiditis, therefore prednisolone is not required. The lack of eye signs is further reassurance. Total thyroidectomy is not an appropriate treatment option given the localisation of the increased activity to the right upper lobe. While carbimazole and propylthiouracil may be an interim treatment, the overactivity would still continue if the medication was stopped and therefore the more appropriate (and definitive) treatment is radioiodine.

Question 140

A 37-year-old woman presented with a 1-day history of abdominal pain and diarrhoea.

On examination, she was drowsy and hallucinating, and had widespread purpura.

Investigations:

haemoglobin	92 g/L (115–165)
white cell count	13.3 × 10^9/L (4.0–11.0)
platelet count	17 × 10^9/L (150–400)

serum creatinine	195 µmol/L (60–110)

What abnormality is most likely to be present on blood film examination?

A: acanthocytes ○

B: elliptocytes ○

C: fragmented cells ○

D: stomatocytes ○

E: target cells ○

Question 140 ⌄

Next Question

Question 140

No Answer Given

Incorrect

A 37-year-old woman presented with a 1-day history of abdominal pain and diarrhoea.

On examination, she was drowsy and hallucinating, and had widespread purpura.

Investigations:

haemoglobin	92 g/L (115–165)
white cell count	13.3 × 10^9/L (4.0–11.0)
platelet count	17 × 10^9/L (150–400)

serum creatinine	195 μmol/L (60–110)

What abnormality is most likely to be present on blood film examination?

Answers

A: acanthocytes
B: elliptocytes
C: fragmented cells
D: stomatocytes
E: target cells

Correct answer: C

Explanation

The patient presents with gastrointestinal and neurological symptoms, and the blood results show anaemia, thrombocytopaenia and renal impairment. The neurological features and marked thrombocytopaenia would be in keeping with thrombotic thrombocytopaenic purpura (TTP) rather than haemolytic uraemic syndrome (HUS). Both TTP and HUS are associated with microangiopathic haemolytic anaemia (MAHA). An important blood film feature of MAHA is the presence of fragmented red cells. Acanthocytes, elliptocytes, target cells and stomatocytes are not a key blood film feature of MAHA.

Question 141

An 87-year-old woman was admitted with increasing drowsiness, which resulted in her not eating or drinking. She had a history of dementia and was living in a nursing home.

Investigations:

serum sodium	178 mmol/L (137–144)
serum potassium	6.0 mmol/L (3.5–4.9)
serum urea	18.0 mmol/L (2.5–7.0)
serum creatinine	190 µmol/L (60–110)
fasting plasma glucose	4.5 mmol/L (3.0–6.0)

What measurement corresponds most closely to her serum osmolality?

A: 210 mosmol/kg ○

B: 310 mosmol/kg ○

C: 350 mosmol/kg ○

D: 390 mosmol/kg ○

E: 410 mosmol/kg ○

Question 141

No Answer Given

Incorrect

An 87-year-old woman was admitted with increasing drowsiness, which resulted in her not eating or drinking. She had a history of dementia and was living in a nursing home.

Investigations:

serum sodium	178 mmol/L (137–144)
serum potassium	6.0 mmol/L (3.5–4.9)
serum urea	18.0 mmol/L (2.5–7.0)
serum creatinine	190 μmol/L (60–110)
fasting plasma glucose	4.5 mmol/L (3.0–6.0)

What measurement corresponds most closely to her serum osmolality?

Answers

A: 210 mosmol/kg
B: 310 mosmol/kg
C: 350 mosmol/kg
D: 390 mosmol/kg
E: 410 mosmol/kg

Correct answer: D

Explanation

Calculated osmolality = (2 × Na) + (2 × K) + glucose + urea (all in mmol/L). As potassium is present and concentration is higher than 5 mmol/L, accounting for this and associated anions should be made by using the formula including potassium multiplied by 2.

Question 142

A 32-year-old man presented with increasing headache and facial weakness. Two weeks previously, he had developed a right-sided facial palsy with pain behind the right ear. The previous summer, he had camped with his family in southern Germany.

Examination revealed mild photophobia, neck stiffness, and a right lower motor neurone facial weakness, but no other neurological signs.

Which organism is the most likely cause?

A: Borrelia burgdorferi ○

B: Brucella abortus ○

C: Cryptococcus neoformans ○

D: Listeria monocytogenes ○

E: Neisseria meningitidis ○

Question 142

No Answer Given

Incorrect

A 32-year-old man presented with increasing headache and facial weakness. Two weeks previously, he had developed a right-sided facial palsy with pain behind the right ear. The previous summer, he had camped with his family in southern Germany.

Examination revealed mild photophobia, neck stiffness, and a right lower motor neurone facial weakness, but no other neurological signs.

Which organism is the most likely cause?

Answers

A: Borrelia burgdorferi
B: Brucella abortus
C: Cryptococcus neoformans
D: Listeria monocytogenes
E: Neisseria meningitidis

Correct answer: A

Explanation

The clues for Lyme disease are apparent: travel to relevant area, followed by lower motor neuron VII nerve palsy, all of which would be unusual with other distractors. Listeria and cryptococcus are unlikely in a young immunocompetent man in the UK.

Question 143

A 76-year-old woman presented with a 6-month history of urinary urgency, nocturia and urge incontinence. She was taking immediate-release oxybutynin but this was discontinued after 6 weeks because of lack of significant improvement and severe mouth dryness.

Rectal and vaginal examinations were normal.

Investigations:

midstream urine culture	no bacterial growth
post-void residual urine volume	40 mL

What is the most appropriate next treatment?

A: desmopressin ○

B: duloxetine ○

C: flavoxate ○

D: propantheline ○

E: solifenacin ○

Question 143

No Answer Given

Incorrect

A 76-year-old woman presented with a 6-month history of urinary urgency, nocturia and urge incontinence. She was taking immediate-release oxybutynin but this was discontinued after 6 weeks because of lack of significant improvement and severe mouth dryness.

Rectal and vaginal examinations were normal.

Investigations:

midstream urine culture	no bacterial growth
post-void residual urine volume	40 mL

What is the most appropriate next treatment?

Answers

A: desmopressin
B: duloxetine
C: flavoxate
D: propantheline
E: solifenacin

Correct answer: E

Explanation

The patient has an overactive bladder. NICE 2019 states that, if the first medicine for overactive bladder is not effective or well-tolerated, offer another medicine with a low acquisition cost. As oxybutynin was ineffective, another antimuscarinic drug, like solifenacin, should therefore be used.

Question 144

A 68-year-old woman presented with a 3-day history of discomfort when brushing her hair, pain on chewing and an episode of blurred vision.

A blood test was performed to check ESR and serum CRP.

What is the most important next step?

A: CT scan of head ○

B: measure ANCA ○

C: prescribe diclofenac ○

D: prescribe prednisolone ○

E: temporal artery biopsy ○

Question 144 ⌄ Next Question

Question 144

No Answer Given

Incorrect

A 68-year-old woman presented with a 3-day history of discomfort when brushing her hair, pain on chewing and an episode of blurred vision.

A blood test was performed to check ESR and serum CRP.

What is the most important next step?

Answers

A: CT scan of head
B: measure ANCA
C: prescribe diclofenac
D: prescribe prednisolone
E: temporal artery biopsy

Correct answer: D

Explanation

This is a classic presentation of giant cell arteritis: the patient is over 50 years old, has a subacute onset of scalp irritation, jaw claudication and impending vision loss. Elevation of serum CRP and ESR would be expected. This is a rheumatological emergency, and treatment should not be delayed by further investigation. Time is of the essence and corticosteroid therapy should be started immediately. Temporal artery biopsy can give a definitive diagnosis but initiation of treatment should not be delayed for this procedure; increasingly a temporal artery ultrasound scan is being used in place of or as an adjunct in diagnosis. There are no features in the history to suggest ANCA-associated vasculitis or an intracranial event as the cause of symptoms, so CT scan of head and ANCA testing are not going to be of use. Diclofenac has no role in management of this condition.

Question 145

A 72-year-old woman presented with progressive tiredness over the past few months and was found to have iron deficiency anaemia. She had osteoarthritis and was regularly taking ibuprofen and paracetamol.

Investigations:

upper gastrointestinal endoscopy	1-cm duodenal ulcer with no evidence of recent bleeding; Helicobacter pylori negative

She was treated with omeprazole.

What is the most appropriate next investigation?

A: colonoscopy ○

B: CT scan of abdomen ○

C: no further investigation needed ○

D: repeat upper gastrointestinal endoscopy in 8 weeks ○

E: video capsule endoscopy ○

Question 145

No Answer Given

Incorrect

A 72-year-old woman presented with progressive tiredness over the past few months and was found to have iron deficiency anaemia. She had osteoarthritis and was regularly taking ibuprofen and paracetamol.

Investigations:

upper gastrointestinal endoscopy	1-cm duodenal ulcer with no evidence of recent bleeding; Helicobacter pylori negative

She was treated with omeprazole.

What is the most appropriate next investigation?

Answers

A: colonoscopy
B: CT scan of abdomen
C: no further investigation needed
D: repeat upper gastrointestinal endoscopy in 8 weeks
E: video capsule endoscopy

Correct answer: A

Explanation

Iron deficiency anaemia (IDA) in a 72-year-old person can be caused by underlying malignancy in up to 10% of cases. This is often right-sided colonic cancers, which are otherwise asymptomatic and, therefore, a colonoscopy is almost always required in such cases. Repeat endoscopy is not required to assess healing of duodenal ulcer. CT scan is less sensitive than colonoscopy in identifying colonic pathology and should only be considered if there are contraindications to colonoscopy. Video capsule endoscopy is reserved for cases of difficult-to-diagnose IDA following upper gastrointestinal endoscopy/colonoscopy.

Question 146

A 58-year-old woman with autosomal dominant polycystic kidney disease presented with severe right-sided flank pain.

On examination, she was in distress. Her temperature was 37.4°C, and the right kidney was palpable and tender. Urinalysis showed blood 1+, protein 1+.

Investigations:

white cell count	8.2 × 10^9/L (4.0–11.0)

What is the most likely reason for her pain?

A: cyst haemorrhage ○

B: cyst infection ○

C: cyst torsion ○

D: renal calculus ○

E: renal cell carcinoma ○

Question 146

No Answer Given

Incorrect

A 58-year-old woman with autosomal dominant polycystic kidney disease presented with severe right-sided flank pain.

On examination, she was in distress. Her temperature was 37.4°C, and the right kidney was palpable and tender. Urinalysis showed blood 1+, protein 1+.

Investigations:

white cell count	8.2×10^9/L (4.0–11.0)

What is the most likely reason for her pain?

Answers

A: cyst haemorrhage
B: cyst infection
C: cyst torsion
D: renal calculus
E: renal cell carcinoma

Correct answer: A

Explanation

Cyst haemorrhage is correct as the most likely cause of loin pain as a complication of autosomal dominant polycystic kidney disease without infection. The white cell count is normal, making infection less likely. With her background, cyst haemorrhage would be more likely than renal calculi and renal cell carcinoma.

Question 147

What is the site of origin of circulating B-type natriuretic peptide in patients with chronic heart failure?

A: cardiac atria ○

B: cardiac ventricles ○

C: hypothalamus ○

D: juxtaglomerular apparatus ○

E: posterior pituitary gland ○

Question 147 ⌄

Next Question

Question 147

No Answer Given

Incorrect

What is the site of origin of circulating B-type natriuretic peptide in patients with chronic heart failure?

Answers

A: cardiac atria
B: cardiac ventricles
C: hypothalamus
D: juxtaglomerular apparatus
E: posterior pituitary gland

Correct answer: B

Explanation

B-type natriuretic peptide is released from myocytes in the cardiac ventricles in response to stretch-associated high ventricular filling pressures.

Question 148

A 57-year-old woman was found to have cervical cancer and was treated with surgery, followed by chemotherapy with cisplatin.

What is the most likely adverse effect of this treatment?

A: acute hepatitis ○

B: cardiomyopathy ○

C: hypocalcaemia ○

D: pulmonary fibrosis ○

E: sensory neuropathy ○

Question 148 ⌄

Next Question

Question 148

No Answer Given

Incorrect

A 57-year-old woman was found to have cervical cancer and was treated with surgery, followed by chemotherapy with cisplatin.

What is the most likely adverse effect of this treatment?

Answers

A: acute hepatitis
B: cardiomyopathy
C: hypocalcaemia
D: pulmonary fibrosis
E: sensory neuropathy

Correct answer: E

Explanation

Recognised adverse effects of platinum compounds include nephrotoxicity and neurotoxicity which manifests as sensory neuropathy or hearing loss.

Question 149
Next Question

Question 149

A 52-year-old man presented to the emergency department with shortness of breath and leg swelling. He had a history of hypertension, hyperlipidaemia and chronic alcohol misuse. Congestive heart failure was diagnosed, and he was treated with furosemide, bisoprolol and enalapril.

On examination, his JVP was elevated and there was a pansystolic murmur with a third heart sound.

Investigations following treatment:

ECG	sinus rhythm at 60 beats/min with left bundle branch block
transthoracic echocardiogram	left ventricular ejection fraction 25% with global hypokinesis

What is the most appropriate additional pharmacological treatment?

A: digoxin ○

B: eplerenone ○

C: hydralazine ○

D: isosorbide dinitrate ○

E: ivabradine ○

Question 149

No Answer Given

Incorrect

A 52-year-old man presented to the emergency department with shortness of breath and leg swelling. He had a history of hypertension, hyperlipidaemia and chronic alcohol misuse. Congestive heart failure was diagnosed, and he was treated with furosemide, bisoprolol and enalapril.

On examination, his JVP was elevated and there was a pansystolic murmur with a third heart sound.

Investigations following treatment:

ECG	sinus rhythm at 60 beats/min with left bundle branch block

transthoracic echocardiogram	left ventricular ejection fraction 25% with global hypokinesis

What is the most appropriate additional pharmacological treatment?

Answers

A: digoxin
B: eplerenone
C: hydralazine
D: isosorbide dinitrate
E: ivabradine

Correct answer: B

Explanation

This question is testing knowledge on the medical management of heart failure. The patient has an acute presentation of heart failure, likely biventricular systolic dysfunction (also known as congestive cardiac failure), given the presentation of left- (breathlessness) and right- (peripheral oedema) sided symptoms and the history of alcohol misuse and high BP. He is started on treatment with a beta-adrenoceptor blocker and ACE inhibitor for morbidity and mortality benefit and then a diuretic for symptom control. The question is then, following investigations, what additional therapy would be indicated and therefore offer additional benefit. The patient is in sinus rhythm at 60 beats/min, so digoxin, which should be offered third line in worsening or severe heart failure (not second line as in this case), is not indicated. Eplerenone is the correct answer, as an aldosterone antagonist should be offered second line in patients with moderate to severe heart failure. The patient’s BP is not given, nor is any intolerance to the ACE inhibitor suggested, so offering an arterial dilator (hydralazine) or a venodilator (isosorbide mononitrate), which are often given in combination, particularly in African–Caribbean patients, as first or second line, is not indicated. Even though a left ventricular ejection fraction of less than 35% is an indication for ivabradine, it is not indicated because the patient’s heart rate is not above 75 beats/min, it is not following 4 weeks after starting first- and second-line treatments, and the patient does not have ischaemic heart disease or require an additional antianginal.

Question 150

A 47-year-old man presented with episodes of feeling that he was about to have a heart attack, associated with palpitations and sweating. He recovered fully within 30 minutes. He had experienced 12 episodes over the previous 4 weeks. He had been working long hours and was concerned about a forthcoming interview for a new job.

Examination was normal.

What is the most likely diagnosis?

- A: acute stress reaction ○
- B: adjustment disorder ○
- C: generalised anxiety disorder ○
- D: illness anxiety disorder ○
- E: panic disorder ○

Question 150 ⌄

Next Question

Question 150

No Answer Given

Incorrect

A 47-year-old man presented with episodes of feeling that he was about to have a heart attack, associated with palpitations and sweating. He recovered fully within 30 minutes. He had experienced 12 episodes over the previous 4 weeks. He had been working long hours and was concerned about a forthcoming interview for a new job.

Examination was normal.

What is the most likely diagnosis?

Answers

A: acute stress reaction
B: adjustment disorder
C: generalised anxiety disorder
D: illness anxiety disorder
E: panic disorder

Correct answer: E

Explanation

This is a typical description of panic disorder: episodic acute anxiety with associated physical symptoms. Symptoms are not present outside of the attack, which would be characteristic of generalised anxiety disorder. Acute stress reaction needs a major acute stressor, normally terrifying, and is associated with generalised anxiety and arousal, sleep disturbance, possible hyper-vigilance and avoidance; the patient may go on to develop post-traumatic stress disorder. Adjustment reaction again needs an event and would be associated with more generalised anxiety, sadness, worry, low mood and tearfulness. Illness anxiety disorder is excessive concern and worry about serious physical illness.

Question 151

A 52-year-old woman presented with a 6-month history of upper limb weakness that had progressed to affect her lower limbs. Over the previous 2 months, she had been complaining of increasing dysphagia to liquids more than solids, and worsening shortness of breath at rest.

On examination, she had a brisk jaw jerk, tongue fasciculations and MRC grade 4 muscle power in shoulder abduction and hip flexion bilaterally.

What is the most likely diagnosis?

A: motor neurone disease ○

B: multiple sclerosis ○

C: myasthenia gravis ○

D: spinobulbar muscular atrophy ○

E: syringobulbia ○

Question 151 ⌄

Next Question

Question 151

No Answer Given

Incorrect

A 52-year-old woman presented with a 6-month history of upper limb weakness that had progressed to affect her lower limbs. Over the previous 2 months, she had been complaining of increasing dysphagia to liquids more than solids, and worsening shortness of breath at rest.

On examination, she had a brisk jaw jerk, tongue fasciculations and MRC grade 4 muscle power in shoulder abduction and hip flexion bilaterally.

What is the most likely diagnosis?

Answers

A: motor neurone disease
B: multiple sclerosis
C: myasthenia gravis
D: spinobulbar muscular atrophy
E: syringobulbia

Correct answer: A

Explanation

The short, progressive, purely motor history with upper motor neuron (UMN) and lower motor neuron (LMN) signs is characteristic of motor neurone disease (MND) or amyotrophic lateral sclerosis (ALS). Multiple sclerosis would not cause LMN signs (tongue fasciculation), myasthenia gravis can mimic MND but would not cause the signs and tends to be fatigable not progressive, spinobulbar muscular atrophy usually has a much longer history and LMN only, and syringobulbia would most likely produce sensory involvement.

Question 152

A 51-year-old man presented with a 2-month history of intermittent breathlessness, and a 1-year history of a blocked nose. He had been found to have angina 2 years previously and was taking aspirin, ramipril, simvastatin, atenolol and omeprazole.

Investigations:

FEV_1	2.5 L (75% predicted)
FVC	4.0 L (88% predicted)

Which drug is most likely to be causing his symptoms?

A: aspirin ○

B: atenolol ○

C: omeprazole ○

D: ramipril ○

E: simvastatin ○

Question 152

No Answer Given

Incorrect

A 51-year-old man presented with a 2-month history of intermittent breathlessness, and a 1-year history of a blocked nose. He had been found to have angina 2 years previously and was taking aspirin, ramipril, simvastatin, atenolol and omeprazole.

Investigations:

FEV_1	2.5 L (75% predicted)
FVC	4.0 L (88% predicted)

Which drug is most likely to be causing his symptoms?

Answers

A: aspirin
B: atenolol
C: omeprazole
D: ramipril
E: simvastatin

Correct answer: A

Explanation

Aspirin can worsen asthma and cause nasal symptoms in a sub-group of patients with asthma. Aspirin is associated with nasal polyps, hence the description of a blocked nose. Ramipril and other ACE inhibitors can cause a cough and atenolol can cause breathlessness but neither of these is associated with nasal polyps. Omeprazole can be used to treat reflux-related cough.

Question 153

A 17-year-old girl was informed at a blood donation session that she was not able to donate blood. She was a carrier of sickle haemoglobin. She had had a pelvic fracture following a road traffic collision the previous year, for which she had required a blood transfusion. She had been on holiday in Kenya 3 years previously. She did not smoke, drink or use recreational drugs.

On examination, she had a tattoo on her arm. She weighed 63 kg.

What is the most likely reason for her not being able to donate blood?

A: history of travel to a malarial area ○

B: previous blood transfusion ○

C: sickle haemoglobin carrier ○

D: tattoo ○

E: weight ○

Question 153

No Answer Given

Incorrect

A 17-year-old girl was informed at a blood donation session that she was not able to donate blood. She was a carrier of sickle haemoglobin. She had had a pelvic fracture following a road traffic collision the previous year, for which she had required a blood transfusion. She had been on holiday in Kenya 3 years previously. She did not smoke, drink or use recreational drugs.

On examination, she had a tattoo on her arm. She weighed 63 kg.

What is the most likely reason for her not being able to donate blood?

Answers

A: history of travel to a malarial area
B: previous blood transfusion
C: sickle haemoglobin carrier
D: tattoo
E: weight

Correct answer: B

Explanation

Of the options, people who have been transfused will not be accepted as blood donors, in order to reduce the risk of transmitting prion diseases such as variant Creutzfeldt–Jakob disease to recipients (donor selection criteria can be reviewed at https://www.transfusionguidelines.org/transfusion-handbook/3-providing-s...).

Question 154

The Health Survey for England recorded the age, sex, ethnicity, height, weight, smoking status, alcohol consumption and systolic BP in a representative sample of the population.

What is the best graphical method for illustrating the relation between age and BP?

A: block diagram ○

B: forest plot ○

C: histogram ○

D: pie chart ○

E: scatter plot ○

Question 154 ⌄

Next Question

Question 154

No Answer Given

Incorrect

The Health Survey for England recorded the age, sex, ethnicity, height, weight, smoking status, alcohol consumption and systolic BP in a representative sample of the population.

What is the best graphical method for illustrating the relation between age and BP?

Answers

A: block diagram
B: forest plot
C: histogram
D: pie chart
E: scatter plot

Correct answer: E

Explanation

A scatter plot facilitates the charting of two continuous variables, allowing the correlation to be calculated. A block diagram links fixed boxes so cannot show any relationship and the other items only permit one continuous variable to be demonstrated.

Question 155

A 60-year-old woman with advanced metastatic cancer was treated with subcutaneous haloperidol infusion.

What is the main site of action of this antiemetic?

- A: area postrema ○
- B: cerebral cortex ○
- C: gut wall ○
- D: substantia nigra ○
- E: vestibular nuclei ○

Question 155 ⌄

Next Question

Question 155

No Answer Given

Incorrect

A 60-year-old woman with advanced metastatic cancer was treated with subcutaneous haloperidol infusion.

What is the main site of action of this antiemetic?

Answers

A: area postrema
B: cerebral cortex
C: gut wall
D: substantia nigra
E: vestibular nuclei

Correct answer: A

Explanation

Haloperidol is a D2-receptor antagonist. It has a central antiemetic action, binding to receptors in the area postrema, which is a medullary structure controlling vomiting.

Question 156

A 45-year-old African–Caribbean man was referred to the outpatient clinic with uncontrolled hypertension.

On examination, his BP was 174/94 mmHg. Examination was otherwise normal.

Investigations:

serum creatinine	105 µmol/L (60–110)

What is the most appropriate treatment?

A: amlodipine ○

B: doxazosin ○

C: metoprolol ○

D: ramipril ○

E: spironolactone ○

Question 156 ⌄
Next Question

Question 156

No Answer Given

Incorrect

A 45-year-old African–Caribbean man was referred to the outpatient clinic with uncontrolled hypertension.

On examination, his BP was 174/94 mmHg. Examination was otherwise normal.

Investigations:

serum creatinine	105 µmol/L (60–110)

What is the most appropriate treatment?

Answers

A: amlodipine
B: doxazosin
C: metoprolol
D: ramipril
E: spironolactone

Correct answer: A

Explanation

This question is looking at first-line treatment for hypertension. Amlodipine is first line on current NICE guidelines for African–Caribbean patients who are NOT diabetic and do NOT have significant proteinuria.

Question 157

A 76-year-old man presented with a 3-year history of a gradually enlarging red patch on his leg. He was an ex-serviceman who had worked in the Mediterranean for several years.

On examination, there was an erythematous scaly patch, 5 × 6 cm in diameter, on his shin. The edge was well demarcated.

What is the most likely diagnosis?

A: Bowen’s disease ○

B: discoid eczema ○

C: pityriasis rosea ○

D: psoriasis vulgaris ○

E: secondary syphilis ○

Question 157

Next Question

Question 157

No Answer Given

Incorrect

A 76-year-old man presented with a 3-year history of a gradually enlarging red patch on his leg. He was an ex-serviceman who had worked in the Mediterranean for several years.

On examination, there was an erythematous scaly patch, 5 × 6 cm in diameter, on his shin. The edge was well demarcated.

What is the most likely diagnosis?

Answers

A: Bowen’s disease
B: discoid eczema
C: pityriasis rosea
D: psoriasis vulgaris
E: secondary syphilis

Correct answer: A

Explanation

The combination of a history of working in the Mediterranean for several years (indicating significant previous sun exposure) and the patient’s age suggests that this may be a sun-induced lesion resulting from prior UV radiation damage. The site of the lesion on the shin would be compatible with Bowen’s disease, discoid eczema or psoriasis vulgaris, but the 3-year history of a gradually enlarging lesion at that site and the fact that there is no mention of a rash or lesions elsewhere makes Bowen’s disease the most likely diagnosis.

Question 158

A 27-year-old man presented with a 1-day history of fever and a swollen right leg. Three years previously, he had developed an urticarial rash, tongue swelling and stridor after taking amoxicillin.

On examination, he appeared extremely unwell. His temperature was 39.8°C, his pulse was 130 beats/min and his BP was 66/38 mmHg. He had severe cellulitis of the right leg.

What is the most appropriate empirical treatment?

A: ceftriaxone ○

B: clindamycin ○

C: gentamicin ○

D: meropenem ○

E: piperacillin with tazobactam ○

Question 158

No Answer Given

Incorrect

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On examination, he appeared extremely unwell. His temperature was 39.8°C, his pulse was 130 beats/min and his BP was 66/38 mmHg. He had severe cellulitis of the right leg.

What is the most appropriate empirical treatment?

Answers

A: ceftriaxone
B: clindamycin
C: gentamicin
D: meropenem
E: piperacillin with tazobactam

Correct answer: B

Explanation

This is a patient with a history suggestive of anaphylaxis to a penicillin. Therefore, beta-lactam drugs should be avoided. This excludes ceftriaxone, meropenem and piperacillin with tazobactam. Clindamycin is a macrolide antibiotic and, therefore, is the most appropriate. Gentamicin should be reserved for severely unwell patients and is usually used in combination.

Question 159

A 67-year-old man presented with a 6-month history of muscle rigidity and a resting tremor. A diagnosis of Parkinson's disease was made and he was treated with ropinirole.

What is the mechanism of action of ropinirole?

A: catechol-O-methyltransferase inhibitor ○

B: DOPA-decarboxylase inhibitor ○

C: dopamine receptor agonist ○

D: dopamine transporter inhibitor ○

E: monoamine oxidase B inhibitor ○

Question 159 ⌄

Next Question

Question 159

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What is the mechanism of action of ropinirole?

Answers

A: catechol-O-methyltransferase inhibitor
B: DOPA-decarboxylase inhibitor
C: dopamine receptor agonist
D: dopamine transporter inhibitor
E: monoamine oxidase B inhibitor

Correct answer: C

Explanation

Ropinirole is an agonist at dopamine receptors and is used as an adjunct to levodopa to treat Parkinson’s disease.

Question 160

A 55-year-old woman presented with vomiting and abdominal pain. She had a 3-month history of thirst and polyuria.

On examination, her pulse was 90 beats/min and her BP was 90/65 mmHg. There was reduced skin turgor.

Investigations:

serum sodium	150 mmol/L (137–144)
serum potassium	3.0 mmol/L (3.5–4.9)
serum adjusted calcium	3.40 mmol/L (2.20–2.60)
serum phosphate	0.50 mmol/L (0.80–1.45)
plasma parathyroid hormone	6.1 pmol/L (0.9–5.4)

What is the most likely cause of her hypophosphataemia?

A: decreased gastrointestinal absorption ○

B: increased bone resorption ○

C: intracellular shift of phosphate ○

D: reduced renal reabsorption of phosphate ○

E: vomiting ○

Question 160

No Answer Given

Incorrect

A 55-year-old woman presented with vomiting and abdominal pain. She had a 3-month history of thirst and polyuria.

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serum sodium	150 mmol/L (137–144)
serum potassium	3.0 mmol/L (3.5–4.9)
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serum phosphate	0.50 mmol/L (0.80–1.45)
plasma parathyroid hormone	6.1 pmol/L (0.9–5.4)

What is the most likely cause of her hypophosphataemia?

Answers

A: decreased gastrointestinal absorption
B: increased bone resorption
C: intracellular shift of phosphate
D: reduced renal reabsorption of phosphate
E: vomiting

Correct answer: D

Explanation

This patient has symptomatic hypercalcaemia with low serum phosphate and slightly elevated plasma parathyroid hormone (PTH). Decreased gastrointestinal absorption could be a cause of this but it is not the most likely cause. Bone resorption releases bound phosphate, so will not cause hypophosphataemia. There is no mention of any actions which could precipitate re-feeding syndrome and, therefore, intracellular shift of phosphate. The phosphate content of vomitus is insufficient to be the most likely cause of this result. Reduced renal absorption of phosphate due to raised PTH is, therefore, the most likely cause of her hypophosphataemia.

Question 161

A 72-year-old man presented with a 6-week history of diffuse pain in his right arm, and numbness in his right thumb.

On examination, there was a reduced right biceps reflex and sensory loss in his right thumb.

What is the most likely diagnosis?

A: C6 radiculopathy ○

B: carpal tunnel syndrome ○

C: Pancoast tumour ○

D: thoracic outlet (cervical rib) syndrome ○

E: ulnar nerve compression at the elbow ○

Question 161 ⌄

Next Question

Question 161

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On examination, there was a reduced right biceps reflex and sensory loss in his right thumb.

What is the most likely diagnosis?

Answers

A: C6 radiculopathy
B: carpal tunnel syndrome
C: Pancoast tumour
D: thoracic outlet (cervical rib) syndrome
E: ulnar nerve compression at the elbow

Correct answer: A

Explanation

The history and exam are suggestive of a C6 radiculopathy, although the biceps reflex is mainly served by C5, and less so by C6; its dermatome does not extend to the hand. Carpal tunnel syndrome affects the median nerve, so would not cause reduced biceps (C5/6) reflex loss; this is the same with ulnar compression, and the sensory loss is wrong. Pancoast tumour typically involves lower roots, and thoracic outlet syndrome is rarely so focal.

Question 162

A 43-year-old woman presented with a 6-week history of pain and swelling of her fingers and toes. She had had a self-limiting episode of guttate psoriasis 15 years previously. Her older sister had systemic lupus erythematosus.

On examination, the patient had diffuse swelling of her right index and left ring fingers, and her left fourth toe.

Investigations:

ESR	18 mm/1st h (<20)
rheumatoid factor	10 kIU/L (<30)
antinuclear antibodies	1:60 dilution (negative at 1:20)

What is the most likely diagnosis?

A: osteoarthritis ○

B: psoriatic arthritis ○

C: rheumatoid arthritis ○

D: systemic lupus erythematosus ○

E: systemic sclerosis ○

Question 162 ⌄

Next Question

Question 162

No Answer Given

Incorrect

A 43-year-old woman presented with a 6-week history of pain and swelling of her fingers and toes. She had had a self-limiting episode of guttate psoriasis 15 years previously. Her older sister had systemic lupus erythematosus.

On examination, the patient had diffuse swelling of her right index and left ring fingers, and her left fourth toe.

Investigations:

ESR	18 mm/1st h (<20)
rheumatoid factor	10 kIU/L (<30)
antinuclear antibodies	1:60 dilution (negative at 1:20)

What is the most likely diagnosis?

Answers

A: osteoarthritis
B: psoriatic arthritis
C: rheumatoid arthritis
D: systemic lupus erythematosus
E: systemic sclerosis

Correct answer: B

Explanation

The diagnosis here is psoriatic arthritis. According to the CASPAR criteria, she scores points for having inflammatory articular disease (joint, spine or entheseal) with a personal history of psoriasis, negative rheumatoid factor and current dactylitis. ESR does not have to be elevated, and often is not. Rheumatoid arthritis classically presents as a symmetrical small joint polyarthritis, usually affecting the metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints, and does not cause dactylitis. She has very mild elevation of antinuclear antibodies, which is not significant without other features of connective tissue disease, and she does not fit the SLICC criteria for systemic lupus erythematosus. There are no clinical features to support a diagnosis of systemic sclerosis in this scenario.

Question 163

A 36-year-old woman presented for review of her ventricular septal defect. She was considering pregnancy. An echocardiogram was performed.

Which finding would indicate the highest potential risk for a subsequent pregnancy?

A: associated aortic regurgitation ○

B: associated bicuspid aortic valve ○

C: high systolic pressure gradient between left and right ventricles ○

D: pulmonary hypertension ○

E: ventricular septal defect measuring half the aortic root diameter ○

Question 163 ⌄

Next Question

Question 163

No Answer Given

Incorrect

A 36-year-old woman presented for review of her ventricular septal defect. She was considering pregnancy. An echocardiogram was performed.

Which finding would indicate the highest potential risk for a subsequent pregnancy?

Answers

A: associated aortic regurgitation
B: associated bicuspid aortic valve
C: high systolic pressure gradient between left and right ventricles
D: pulmonary hypertension
E: ventricular septal defect measuring half the aortic root diameter

Correct answer: D

Explanation

This question is testing knowledge of the risks of cardiac diseases in association with pregnancy. Regurgitant valvular lesions, left or right sided, are well tolerated in pregnancy, so associated aortic regurgitation is incorrect. An associated bicuspid valve with a ventricular septal defect (VSD) would be unusual, but provided the valve function is preserved and not stenotic (stenotic lesions are not well tolerated in pregnancy), then this would not cause problems and so, as you are not told the gradient across the valve or whether it is stenotic, associated bicuspid aortic valve is incorrect. A high systolic pressure gradient between the left and right ventricles is physiologically normal and what causes a left-to-right shunt in a VSD, and so high systolic pressure gradient between left and right ventricles is incorrect. In Eisenmenger syndrome, where the pressure in the right is higher than the left, this causes a right-to-left shunt and would increase risk for a subsequent pregnancy. Pulmonary hypertension significantly increases the risk to both mother and baby during pregnancy and therefore is the correct answer. Finally, VSD measuring half the aortic diameter is irrelevant, as you are not told the size of the aortic root diameter in the first instance. Assuming it is the normal size (2.5 cm approximately) which is usually normalised for body surface area, while it would be large, it is the haemodynamic effects which would be important e.g. leading to left ventricular failure or pulmonary hypertension, but again these are not listed.

Question 164

A study evaluated the effectiveness of a new analgesic in patients with painful knee osteoarthritis. Subjects were asked to assess their pain on a 10-point scale both before and after 6 weeks of treatment.

What is the most appropriate test to ascertain whether the treatment reduced the pain?

A: chi-squared test ○

B: Mann–Whitney U test ○

C: one-sample t-test ○

D: two-sample t-test ○

E: Wilcoxon signed-rank test ○

Question 164

Next Question

Question 164

No Answer Given

Incorrect

A study evaluated the effectiveness of a new analgesic in patients with painful knee osteoarthritis. Subjects were asked to assess their pain on a 10-point scale both before and after 6 weeks of treatment.

What is the most appropriate test to ascertain whether the treatment reduced the pain?

Answers

A: chi-squared test
B: Mann–Whitney U test
C: one-sample t-test
D: two-sample t-test
E: Wilcoxon signed-rank test

Correct answer: E

Explanation

These are not independent variables, and the size of the group is not mentioned, so it cannot be assumed to be a normal distribution. Wilcoxon signed-rank test is, therefore, the correct answer as it is a non-parametric used to compare related data groups.

Question 165

A 72-year-old man presented with loss of the lower half of the visual field of his right eye, with no associated pain. He had type 2 diabetes mellitus and was being treated for hypertension.

Examination showed normal visual acuity in both eyes, with an inferior altitudinal field defect in his right eye. Fundoscopy of his left eye was normal, and the upper part of the right optic disc showed mild disc swelling. No fundal haemorrhages were seen. His BP was 160/90 mmHg.

What is the most likely diagnosis?

A: optic neuritis ○

B: panuveitis ○

C: posterior communicating artery aneurysm ○

D: retinal artery occlusion ○

E: retinal vein thrombosis ○

Question 165

Next Question

Question 165

No Answer Given

Incorrect

A 72-year-old man presented with loss of the lower half of the visual field of his right eye, with no associated pain. He had type 2 diabetes mellitus and was being treated for hypertension.

Examination showed normal visual acuity in both eyes, with an inferior altitudinal field defect in his right eye. Fundoscopy of his left eye was normal, and the upper part of the right optic disc showed mild disc swelling. No fundal haemorrhages were seen. His BP was 160/90 mmHg.

What is the most likely diagnosis?

Answers

A: optic neuritis
B: panuveitis
C: posterior communicating artery aneurysm
D: retinal artery occlusion
E: retinal vein thrombosis

Correct answer: D

Explanation

The visual field defect indicates a likely vascular cause. Branch retinal vein thrombosis is typically associated with fundal haemorrhages, not seen in this case, making an arterial explanation more likely. Optic neuritis and panuveitis would usually lead to impairment of visual acuity, often with pain. A posterior communicating artery aneurysm more typically presents with a pupillary-involving III nerve palsy.

Question 166

A 68-year-old man was referred with muscle contractures following a traumatic head injury 3 years previously.

On examination, there was a left-sided torticollis.

Which muscle is most likely to be responsible?

- A: left omohyoid ○
- B: left sternocleidomastoid ○
- C: left trapezius ○
- D: right omohyoid ○
- E: right sternocleidomastoid ○

Question 166 ⌄

Next Question

Question 166

No Answer Given

Incorrect

A 68-year-old man was referred with muscle contractures following a traumatic head injury 3 years previously.

On examination, there was a left-sided torticollis.

Which muscle is most likely to be responsible?

Answers

A: left omohyoid
B: left sternocleidomastoid
C: left trapezius
D: right omohyoid
E: right sternocleidomastoid

Correct answer: B

Explanation

Torticollis is caused by contracture of the ipsilateral sternocleidomastoid muscle which leads to the chin being pushed to the opposite side.

Question 167

A 20-year-old man presented with a 24-hour history of drooling, a hoarse voice, sore throat and difficulty in breathing.

On examination, he had audible stridor.

Investigations:

lateral X-ray of neck	features of acute epiglottitis

What is the most likely causative organism?

- A: Haemophilus influenzae ○
- B: Klebsiella pneumoniae ○
- C: Neisseria meningitidis ○
- D: Pseudomonas aeruginosa ○
- E: Streptococcus pneumoniae ○

Question 167

No Answer Given

Incorrect

A 20-year-old man presented with a 24-hour history of drooling, a hoarse voice, sore throat and difficulty in breathing.

On examination, he had audible stridor.

Investigations:

lateral X-ray of neck	features of acute epiglottitis

What is the most likely causative organism?

Answers

A: Haemophilus influenzae
B: Klebsiella pneumoniae
C: Neisseria meningitidis
D: Pseudomonas aeruginosa
E: Streptococcus pneumoniae

Correct answer: A

Explanation

Haemophilus influenzae is the most common cause of acute epiglottitis, especially in younger patients. Its incidence is reducing due to vaccination.

Question 168

Which cellular component contains double-stranded circular DNA?

A: Golgi apparatus ○

B: mitochondrion ○

C: nucleus ○

D: peroxisome ○

E: proteasome ○

Question 168
Next Question

Question 168

No Answer Given

Incorrect

Which cellular component contains double-stranded circular DNA?

Answers

A: Golgi apparatus
B: mitochondrion
C: nucleus
D: peroxisome
E: proteasome

Correct answer: B

Explanation

Mitochondrial DNA is matrilineal and is in a covalently bonded circular form. Maternally inherited diseases are associated with mutations in this DNA.

Question 169

An 85-year-old woman presented with breathlessness that had developed over the previous 2 years. She complained of a cough that frequently woke her from sleep. She had been treated with radiotherapy for a cervical lymphoma 20 years previously.

On examination, she was thin, but had no abnormal physical signs. Her oxygen saturation was 95% (94–98) breathing air.

Investigations:

high-resolution CT scan of chest	basal fibrosis associated with dilated bronchi, but no honeycombing or ground-glass change

What is the most likely diagnosis?

A: bronchiectasis ○

B: chronic aspiration ○

C: idiopathic pulmonary fibrosis ○

D: radiation pneumonitis ○

E: sarcoidosis ○

Question 169

No Answer Given

Incorrect

An 85-year-old woman presented with breathlessness that had developed over the previous 2 years. She complained of a cough that frequently woke her from sleep. She had been treated with radiotherapy for a cervical lymphoma 20 years previously.

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Investigations:

high-resolution CT scan of chest	basal fibrosis associated with dilated bronchi, but no honeycombing or ground-glass change

What is the most likely diagnosis?

Answers

A: bronchiectasis
B: chronic aspiration
C: idiopathic pulmonary fibrosis
D: radiation pneumonitis
E: sarcoidosis

Correct answer: B

Explanation

The symptoms described are consistent with chronic aspiration occurring in the elderly. The CT findings are radiological bronchiectasis, a sequela of recurrent episodes of aspiration pneumonia. This does not, however, equate to a clinical diagnosis of bronchiectasis. The absence of honeycombing and ground-glass opacities counts against the diagnosis of radiation pneumonitis and idiopathic pulmonary fibrosis.

Question 170

A 24-year-old man presented with a bluish discoloration of his body, lips and nails. He denied any past medical history.

On examination, he had central cyanosis and a steel-grey complexion. There were no other abnormal findings.

Investigations:

haemoglobin	172 g/L (130–180)

arterial blood gases, breathing air:	
PO_2	13.6 kPa (11.3–12.6)
oxygen saturation	90% (94–98)

What is the most likely diagnosis?

A: cyanotic congenital heart disease ○

B: hepatic cirrhosis ○

C: methaemoglobinaemia ○

D: primary proliferative polycythaemia ○

E: pulmonary arteriovenous shunt ○

Question 170

No Answer Given

Incorrect

A 24-year-old man presented with a bluish discoloration of his body, lips and nails. He denied any past medical history.

On examination, he had central cyanosis and a steel-grey complexion. There were no other abnormal findings.

Investigations:

haemoglobin	172 g/L (130–180)

arterial blood gases, breathing air:	
PO_2	13.6 kPa (11.3–12.6)
oxygen saturation	90% (94–98)

What is the most likely diagnosis?

Answers

A: cyanotic congenital heart disease
B: hepatic cirrhosis
C: methaemoglobinaemia
D: primary proliferative polycythaemia
E: pulmonary arteriovenous shunt

Correct answer: C

Explanation

The investigations in this young patient demonstrate the elevated PO_2 in combination with the reduced oxygen saturation. This would be in keeping with a left shift of the oxygen dissociation curve where there is increased affinity of binding of oxygen with decreased release to the tissues. A well-recognised cause of this is methaemoglobinaemia, either acquired or congenital. Cyanotic congenital heart disease and pulmonary arteriovenous shunt would more typically be associated with a more marked elevation of haemoglobin and reduced oxygen saturation. Primary proliferative polycythaemia should not be associated with hypoxia. Hepatic cirrhosis is not indicated by the findings or history.

Question 171

A 50-year-old woman with discoid lupus erythematosus presented with an apparent worsening of her rash despite treatment with topical corticosteroids and photoprotection.

On examination, there were discrete erythematous, scaly plaques with follicular plugging.

What additional treatment is most appropriate?

A: hydroxychloroquine ○

B: isotretinoin ○

C: nicotinamide ○

D: oxytetracycline ○

E: quinine sulfate ○

Question 171 ⌄

Next Question

Question 171

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Incorrect

A 50-year-old woman with discoid lupus erythematosus presented with an apparent worsening of her rash despite treatment with topical corticosteroids and photoprotection.

On examination, there were discrete erythematous, scaly plaques with follicular plugging.

What additional treatment is most appropriate?

Answers

A: hydroxychloroquine
B: isotretinoin
C: nicotinamide
D: oxytetracycline
E: quinine sulfate

Correct answer: A

Explanation

We are told that this patient has discoid lupus erythematosus and that her rash has worsened despite first-line treatments with topical corticosteroids (admittedly, we are not told the potency of the corticosteroids) and photoprotection (we have to presume that the patient used good photoprotection which included sunscreens protecting against UVB and UVA, as well as appropriate clothing and staying out of sunlight when possible). Discoid lupus erythematosus can cause scarring, and frequently affects the face, so it is important to treat the condition adequately in order to prevent scarring. Antimalarials such as hydroxychloroquine are recommended as first-line and long-term systemic treatment in skin lupus patients with a high risk of scarring (e.g. European Dermatology Forum/European Academy of Dermatology and Venereology guidelines JEADV 2017: 31; 389–404), therefore hydroxychloroquine is the most suitable treatment from the above list. In addition, a Cochrane systematic review update in 2017 indicated that, while hydroxychloroquine and acitretin (which is not in the above list) appear to be of equal efficacy in terms of complete resolution, adverse effects might be more frequent with acitretin (which is teratogenic in women), thus supporting the use of hydroxychloroquine in the above case. Note that although quinine sulfate can be used to treat malaria and was used many years ago for discoid lupus erythematosus, this drug has been replaced by synthetic antimalarials (such as hydroxychloroquine) for treatment of discoid lupus erythematosus. Furthermore, quinine can cause photosensitivity as an adverse effect.

Question 172

A 69-year-old man presented to the outpatient clinic accompanied by his wife. She complained of disturbed sleep and said that her husband had become aggressive during sleep. She reported that he lashed out and screamed, and he had occasionally kicked her and fallen out of bed. These episodes could occur up to four times per night. On waking, he had vivid recall of the events but seemed unable to prevent them from happening.

On examination, his BMI was 32.0 kg/m2 (18.0–25.0).

What is the most likely diagnosis?

A: nocturnal frontal lobe epilepsy ○

B: non-epileptic attack disorder ○

C: periodic limb movement disorder ○

D: rapid-eye-movement sleep behaviour disorder ○

E: sleep apnoea ○

Question 172 ⌄

Next Question

Question 172

No Answer Given

Incorrect

A 69-year-old man presented to the outpatient clinic accompanied by his wife. She complained of disturbed sleep and said that her husband had become aggressive during sleep. She reported that he lashed out and screamed, and he had occasionally kicked her and fallen out of bed. These episodes could occur up to four times per night. On waking, he had vivid recall of the events but seemed unable to prevent them from happening.

On examination, his BMI was 32.0 kg/m2 (18.0–25.0).

What is the most likely diagnosis?

Answers

A: nocturnal frontal lobe epilepsy
B: non-epileptic attack disorder
C: periodic limb movement disorder
D: rapid-eye-movement sleep behaviour disorder
E: sleep apnoea

Correct answer: D

Explanation

This is a text-book description of rapid eye movement (REM) sleep behavioural disturbance, with patients acting out their dreams. Patients are usually easily roused from this, unlike non-REM parasomnias. Sleep apnoea is characterised by snoring and apnoeic episodes, non-epileptic attack disorder rarely arises from true sleep, and periodic limb movement disorder is rarely aggressive, although can disturb bed partners. Frontal lobe attacks can be difficult to distinguish, but are rarely associated with dreaming, rarely involve targeted violence, and are less frequent.

Question 173

A 63-year-old man presented with dyspnoea and left basal chest pain over the past 2–3 hours. His symptoms were aggravated by coughing and movement. He smoked 10 cigarettes per day and had undergone treatment for thrombosis of the left femoral vein 18 months previously.

On examination, his pulse was 110 beats/min and regular. There was oedema of both calves, more marked on the left.

Investigations:

arterial blood gases, breathing air:	
PO_2	9.5 kPa (11.3–12.6)
PCO_2	4.9 kPa (4.7–6.0)
pH	7.40 (7.35–7.45)
H^+	40 nmol/L (35–45)
bicarbonate	22 mmol/L (21–29)
chest X-ray	minor left basal atelectasis

What is the most appropriate diagnostic investigation?

A: CT pulmonary angiography ○

B: D-dimer concentration ○

C: echocardiography ○

D: ultrasound scan of lower limbs and pelvis ○

E: ventilation/perfusion isotope lung scan ○

Question 173 ⌄ Next Question

Question 173

No Answer Given

Incorrect

A 63-year-old man presented with dyspnoea and left basal chest pain over the past 2–3 hours. His symptoms were aggravated by coughing and movement. He smoked 10 cigarettes per day and had undergone treatment for thrombosis of the left femoral vein 18 months previously.

On examination, his pulse was 110 beats/min and regular. There was oedema of both calves, more marked on the left.

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H^+	40 nmol/L (35–45)
bicarbonate	22 mmol/L (21–29)
chest X-ray	minor left basal atelectasis

What is the most appropriate diagnostic investigation?

Answers

A: CT pulmonary angiography
B: D-dimer concentration
C: echocardiography
D: ultrasound scan of lower limbs and pelvis
E: ventilation/perfusion isotope lung scan

Correct answer: A

Explanation

The clinical features described are strongly suggestive of acute pulmonary embolism: acute dyspnoea and focal pleuritic chest pain, with risk factors for venous thromboembolism, namely a previous deep venous thrombosis (DVT) episode and cigarette smoking. The most appropriate investigation would be a confirmatory test for pulmonary embolism, of which CT pulmonary angiography performs better than ventilation/perfusion isotope lung scan. D-dimer test is not helpful in this situation as the pre-test probability is very high. Echocardiography will help to ascertain the degree of right ventricular dysfunction, but in itself is not diagnostic of pulmonary embolism. The presence of a concomitant left lower limb DVT is suggested in the stem, but while an ultrasound scan of lower limbs and pelvis is useful to determine that, the focus should first be on confirming the pulmonary embolism.

Question 174
Next Question

Question 174

A 56-year-old man with chronic kidney disease stage 4 secondary to chronic glomerulonephritis was seen in the outpatient clinic.

Investigations:

serum adjusted calcium	1.85 mmol/L (2.20–2.60)
serum phosphate	1.80 mmol/L (0.80–1.45)
serum alkaline phosphatase	156 U/L (45–105)
plasma parathyroid hormone	32.7 pmol/L (0.9–5.4)

What is the most likely cause of the hypocalcaemia?

A: deficiency of 1,25-dihydroxycholecalciferol ○

B: deficiency of cholecalciferol ○

C: osteomalacia ○

D: pseudohypoparathyroidism ○

E: secondary hyperparathyroidism ○

Question 174

No Answer Given

Incorrect

A 56-year-old man with chronic kidney disease stage 4 secondary to chronic glomerulonephritis was seen in the outpatient clinic.

Investigations:

serum adjusted calcium	1.85 mmol/L (2.20–2.60)
serum phosphate	1.80 mmol/L (0.80–1.45)
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plasma parathyroid hormone	32.7 pmol/L (0.9–5.4)

What is the most likely cause of the hypocalcaemia?

Answers

A: deficiency of 1,25-dihydroxycholecalciferol
B: deficiency of cholecalciferol
C: osteomalacia
D: pseudohypoparathyroidism
E: secondary hyperparathyroidism

Correct answer: A

Explanation

In advanced chronic kidney disease there is impaired 1-alpha hydroxylation of 25-hydroxycholecalciferol by the kidney to 1,25-dihydroxycholecalciferol. 1,25-dihydroxycholecalciferol is the active form of vitamin D. In health, 1,25-dihydroxycholecalciferol promotes calcium and phosphate absorption from the gut and kidney, suppresses parathyroid hormone secretion and acts on the bone to stimulate osteoclast activity. The deficiency of 1,25-dihydroxycholecalciferol observed in chronic kidney disease therefore explains the low serum calcium measurement observed in this patient. Phosphate levels are raised in chronic kidney disease due to impaired renal excretion. The combination of low calcium and raised phosphate then leads to elevated parathyroid hormone levels which causes increased bone turnover and raised serum alkaline phosphatase levels.

Question 175

A 65-year-old man, who was undergoing investigations for tinnitus, was found to have a small intrasellar pituitary lesion measuring 0.9 cm.

Investigations showed no evidence of pituitary hormone excess. A repeat MR scan of brain 1 year later showed no change.

What is the most likely clinical consequence of this lesion?

- A: anterior hypopituitarism ○
- B: bitemporal hemianopia ○
- C: none ○
- D: pituitary apoplexy ○
- E: posterior hypopituitarism ○

Question 175

No Answer Given

Incorrect

A 65-year-old man, who was undergoing investigations for tinnitus, was found to have a small intrasellar pituitary lesion measuring 0.9 cm.

Investigations showed no evidence of pituitary hormone excess. A repeat MR scan of brain 1 year later showed no change.

What is the most likely clinical consequence of this lesion?

Answers

A: anterior hypopituitarism
B: bitemporal hemianopia
C: none
D: pituitary apoplexy
E: posterior hypopituitarism

Correct answer: C

Explanation

This is a non-functioning pituitary lesion which has not changed in size and does not lead to any clinical complication.

Question 176

A 57-year-old woman with longstanding rheumatoid arthritis presented with a 5-day history of severe pain in her right eye. The pain radiated to the frontal region and face, and was worse at night.

On examination, her right eye was red, with normal visual acuity and fundal appearance.

What is the most likely cause of her pain?

A: acute anterior uveitis ○

B: acute glaucoma ○

C: conjunctivitis ○

D: scleritis ○

E: subconjunctival haemorrhage ○

Question 176 ⌄ Next Question

Question 176

No Answer Given

Incorrect

A 57-year-old woman with longstanding rheumatoid arthritis presented with a 5-day history of severe pain in her right eye. The pain radiated to the frontal region and face, and was worse at night.

On examination, her right eye was red, with normal visual acuity and fundal appearance.

What is the most likely cause of her pain?

Answers

A: acute anterior uveitis
B: acute glaucoma
C: conjunctivitis
D: scleritis
E: subconjunctival haemorrhage

Correct answer: D

Explanation

Scleritis/episcleritis is due to primary ocular disease in about 50% of cases. In the other half, it is secondary to various disorders, of which the autoimmune inflammatory disorders are most common, particularly rheumatoid arthritis (RA). Conjunctivitis is not usually so painful and typically bilateral. Subconjunctival haemorrhage always looks impressive but is usually asymptomatic, and glaucoma usually affects acuity, although this would be an important differential. Anterior uveitis could also mimic this appearance, but the underlying RA makes episcleritis more likely.

Question 177
Next Question

Question 177

A 44-year-old man presented with a 2-month history of sores in his mouth and nose, and a 10-day history of blisters on his scalp and back.

On examination, there were flaccid bullae and erosions on his scalp and back. There were erosions of the oral and nasal mucosae.

Pending results of skin biopsy, what is the most appropriate empirical treatment?

A: aciclovir ○

B: itraconazole ○

C: no treatment required ○

D: phenoxymethylpenicillin ○

E: prednisolone ○

Question 177

No Answer Given

Incorrect

A 44-year-old man presented with a 2-month history of sores in his mouth and nose, and a 10-day history of blisters on his scalp and back.

On examination, there were flaccid bullae and erosions on his scalp and back. There were erosions of the oral and nasal mucosae.

Pending results of skin biopsy, what is the most appropriate empirical treatment?

Answers

A: aciclovir
B: itraconazole
C: no treatment required
D: phenoxymethylpenicillin
E: prednisolone

Correct answer: E

Explanation

The combination of flaccid bullae (e.g. large blisters) and erosions on the scalp and back for 2 months, with recent oral ulceration in a 44-year-old person suggests that this is likely to be pemphigus vulgaris. Therefore, oral prednisolone is the most appropriate empirical treatment until the diagnosis is confirmed by histology and direct immunofluorescence of the skin biopsy.

Question 178

A 23-year-old man was admitted with a 3-day history of lower cramping abdominal pain and fever. He had mild diarrhoea, but no blood in his stool. He had not travelled recently.

On examination, he was tender in his right iliac fossa. There were raised, tender, red nodules on his shins.

Investigations:

CT scan of abdomen	cluster of lymph nodes at appendix suggestive of mesenteric adenitis

What is the most likely cause of his symptoms?

A: Campylobacter jejuni infection ○

B: Salmonella enteritidis infection ○

C: tuberculosis ○

D: ulcerative colitis ○

E: Yersinia enterocolitica infection ○

Question 178

Next Question

Question 178

No Answer Given

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A 23-year-old man was admitted with a 3-day history of lower cramping abdominal pain and fever. He had mild diarrhoea, but no blood in his stool. He had not travelled recently.

On examination, he was tender in his right iliac fossa. There were raised, tender, red nodules on his shins.

Investigations:

CT scan of abdomen	cluster of lymph nodes at appendix suggestive of mesenteric adenitis

What is the most likely cause of his symptoms?

Answers

A: Campylobacter jejuni infection
B: Salmonella enteritidis infection
C: tuberculosis
D: ulcerative colitis
E: Yersinia enterocolitica infection

Correct answer: E

Explanation

The history of a non-specific diarrhoeal disease with right iliac fossa pain would most commonly be due to campylobacter. However, the finding of a “cluster of lymph nodes at appendix suggestive of mesenteric adenitis” points more to yersinia infection, which can mimic Crohn’s disease and appendicitis (pseudoappendicitis).

Question 179

A 78-year-old man presented with a 3-month history of haematuria, increasing tiredness and breathlessness on exertion.

On examination, he looked pale.

Investigations:

haemoglobin	78 g/L (130–180)
MCV	108 fL (80–96)
white cell count	2.6 × 10^9/L (4.0–11.0)
neutrophil count	0.9 × 10^9/L (1.5–7.0)
platelet count	78 × 10^9/L (150–400)

blood film	nucleated red blood cells, myelocytes and metamyelocytes

What is the most likely cause of his abnormal blood film?

A: aplastic anaemia ○

B: bone marrow metastases ○

C: hypothyroidism ○

D: myelodysplasia ○

E: vitamin B12 deficiency ○

Question 179

No Answer Given

Incorrect

A 78-year-old man presented with a 3-month history of haematuria, increasing tiredness and breathlessness on exertion.

On examination, he looked pale.

Investigations:

haemoglobin	78 g/L (130–180)
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platelet count	78 × 10^9/L (150–400)

blood film	nucleated red blood cells, myelocytes and metamyelocytes

What is the most likely cause of his abnormal blood film?

Answers

A: aplastic anaemia
B: bone marrow metastases
C: hypothyroidism
D: myelodysplasia
E: vitamin B12 deficiency

Correct answer: B

Explanation

The investigations demonstrate pancytopenia with blood film appearances consistent with bone marrow infiltration (a leukoerythroblastic film). The other options may all induce pancytopenia but would be associated with different blood film appearances. Aplastic anaemia and hypothyroidism generally are associated with a normal blood film, myelodysplasia with abnormal blood cell appearances (e.g. poikilocytosis) and vitamin B_{12} deficiency with the characteristic hypersegmented neutrophils. A further clue in the stem is the haematuria, which indicates an underlying pathology.

Question 180

A 55-year-old man presented saying that he had coughed up blood on several occasions.

Investigations showed a squamous cell carcinoma of the lung.

What associated finding is a contraindication to surgical resection?

A: finger clubbing ○

B: hypercalcaemia ○

C: hypertrophic pulmonary osteoarthropathy ○

D: superior vena cava obstruction ○

E: transfer factor for CO (TLCO) >50% predicted ○

Question 180

Next Question

Question 180

No Answer Given

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A 55-year-old man presented saying that he had coughed up blood on several occasions.

Investigations showed a squamous cell carcinoma of the lung.

What associated finding is a contraindication to surgical resection?

Answers

A: finger clubbing
B: hypercalcaemia
C: hypertrophic pulmonary osteoarthropathy
D: superior vena cava obstruction
E: transfer factor for CO (TLCO) >50% predicted

Correct answer: D

Explanation

The presence of superior vena cava obstruction at presentation is indicative of locally advanced and invasive disease, and portents inoperability and overall poorer survival outcomes. Hypercalcaemia could be a paraneoplastic manifestation and does not necessarily preclude curative surgical resection. Although predicted postoperative TL_{CO} needs to be formally calculated based on the extent of resection, a baseline TL_{CO} >50% predicted is a favourable finding.

Question 181

A 70-year-old woman presented after being found collapsed at home.

Examination showed weakness of the lower two-thirds of the left side of her face and a dense left hemiparesis affecting her arm and leg. She had a fixed gaze palsy to the right affecting both eyes.

Damage to which area of the brain is most likely to have produced the gaze palsy?

A: left frontal lobe ○

B: left medulla oblongata ○

C: left occipital lobe ○

D: right frontal lobe ○

E: right occipital lobe ○

Question 181 ⌄

Next Question

Question 181

No Answer Given

Incorrect

A 70-year-old woman presented after being found collapsed at home.

Examination showed weakness of the lower two-thirds of the left side of her face and a dense left hemiparesis affecting her arm and leg. She had a fixed gaze palsy to the right affecting both eyes.

Damage to which area of the brain is most likely to have produced the gaze palsy?

Answers

A: left frontal lobe
B: left medulla oblongata
C: left occipital lobe
D: right frontal lobe
E: right occipital lobe

Correct answer: D

Explanation

Left hemiparesis with left upper motor neuron facial nerve palsy, implying a right-sided brain lesion. Fixed gaze palsy to the right supports this (the eyes ‘look towards’ the side of the lesion). These findings are typical of a frontal lobe lesion: Posterior circulation (occipital) stroke would cause ipsilateral cranial nerve signs and contralateral limb signs (‘crossed deficit’).

Question 182

A 62-year-old woman presented with a 1-hour history of left-sided weakness. She was found to have an ischaemic stroke. A decision was made to administer alteplase.

What best describes the mechanism of action of alteplase?

- A: acceleration of plasminogen to plasmin conversion ○
- B: adenosine diphosphate (ADP) P2Y12 receptor antagonism ○
- C: cyclo-oxygenase-1 inhibition ○
- D: factor Xa inhibition ○
- E: vitamin K epoxide reductase inhibition ○

Question 182

No Answer Given

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A 62-year-old woman presented with a 1-hour history of left-sided weakness. She was found to have an ischaemic stroke. A decision was made to administer alteplase.

What best describes the mechanism of action of alteplase?

Answers

A: acceleration of plasminogen to plasmin conversion
B: adenosine diphosphate (ADP) P2Y12 receptor antagonism
C: cyclo-oxygenase-1 inhibition
D: factor Xa inhibition
E: vitamin K epoxide reductase inhibition

Correct answer: A

Explanation

Alteplase is a human tissue plasminogen activator. It binds to fibrin-rich clots and cleaves plasminogen to form plasmin which then degrades the fibrin matrix of the thrombus.

Question 183

A 26-year-old woman with a previous history of deep venous thrombosis was treated with low-molecular-weight heparin for a further episode proven by a Doppler ultrasound scan. She also reported that she had had two first-trimester spontaneous miscarriages. She was currently using contraception.

Investigations:

prothrombin time	13.0 s (11.5–15.5)
activated partial thromboplastin time	50 s (30–40)
anticardiolipin IgG antibodies	62 U/mL (<10)
pregnancy test	negative

What is the most appropriate treatment?

A: apixaban ○

B: aspirin ○

C: dabigatran ○

D: low-molecular-weight heparin ○

E: warfarin ○

Question 183 ⌄

Next Question

Question 183

No Answer Given

Incorrect

A 26-year-old woman with a previous history of deep venous thrombosis was treated with low-molecular-weight heparin for a further episode proven by a Doppler ultrasound scan. She also reported that she had had two first-trimester spontaneous miscarriages. She was currently using contraception.

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anticardiolipin IgG antibodies	62 U/mL (<10)
pregnancy test	negative

What is the most appropriate treatment?

Answers

A: apixaban
B: aspirin
C: dabigatran
D: low-molecular-weight heparin
E: warfarin

Correct answer: C

Explanation

The presentation is very strongly suggestive of antiphospholipid syndrome (APLS), although the diagnostic criteria would require the abnormal laboratory tests to be repeated at least 12 weeks later. APLS is diagnosed when both clinical and laboratory features are present. This patient has the clinical features of venous thromboembolism (VTE) and pregnancy loss, as well as the laboratory features of positive anticardiolipin antibodies and a prolonged APTT which is suggestive of a lupus anticoagulant. Long-term anticoagulation would be indicated, and in APLS direct oral anticoagulants should not be used for treatment of VTE as they are less effective than warfarin. Warfarin should not be used in pregnancy, and if the patient were to be planning a pregnancy then low-molecular-weight heparin would be recommended at this time.

Question 184

A 30-year-old woman complained of a hand tremor at a routine transplant clinic review. She had had a successful renal transplant 3 weeks previously. Her medication included mycophenolate mofetil, tacrolimus, prednisolone, co-trimoxazole and valganciclovir.

Which drug is most likely to be the cause of her tremor?

A: co-trimoxazole ○

B: mycophenolate mofetil ○

C: prednisolone ○

D: tacrolimus ○

E: valganciclovir ○

Question 184

Next Question

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No Answer Given

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A 30-year-old woman complained of a hand tremor at a routine transplant clinic review. She had had a successful renal transplant 3 weeks previously. Her medication included mycophenolate mofetil, tacrolimus, prednisolone, co-trimoxazole and valganciclovir.

Which drug is most likely to be the cause of her tremor?

Answers

A: co-trimoxazole
B: mycophenolate mofetil
C: prednisolone
D: tacrolimus
E: valganciclovir

Correct answer: D

Explanation

This is a well-known and common adverse effect of tacrolimus, for which patients are counselled beforehand. It is typically worse in the first few months post transplantation because the target levels of tacrolimus are higher to cover the increased risk of rejection.

Question 185

In a healthy subject, what is most likely to decrease pulmonary vascular resistance?

- A: endothelin ○
- B: epoprostenol (prostacyclin) ○
- C: hypocapnia ○
- D: hypoxia ○
- E: noradrenaline (norepinephrine) ○

Question 185 ⌄

Next Question

Question 185

No Answer Given

Incorrect

In a healthy subject, what is most likely to decrease pulmonary vascular resistance?

Answers

A: endothelin
B: epoprostenol (prostacyclin)
C: hypocapnia
D: hypoxia
E: noradrenaline (norepinephrine)

Correct answer: B

Explanation

Pulmonary vascular resistance (PVR) is mainly generated by arterioles, blood viscosity and lung volume. It is increased by hypoxia, noradrenaline (norepinephrine) and endothelin. The effects of hypocapnia are variable (therefore, not the best answer of the five). PVR is decreased by epoprostenol (prostacyclin).

Question 186

A 45-year-old woman presented with a 5-year history of pain in her right hand, spreading to the whole arm and the scapular and pectoral areas.

On examination, there was wasting of the small muscles of her right hand, and mild weakness of her right hand and wrist. The right biceps, supinator and triceps reflexes were all absent. On sensory examination, there was impairment of pinprick and temperature sensation throughout her right arm.

What is the most likely diagnosis?

A: cervical spondylosis ○

B: malignant infiltration of the right brachial plexus ○

C: multiple sclerosis ○

D: subacute combined degeneration of the spinal cord ○

E: syringomyelia ○

Question 186

No Answer Given

Incorrect

A 45-year-old woman presented with a 5-year history of pain in her right hand, spreading to the whole arm and the scapular and pectoral areas.

On examination, there was wasting of the small muscles of her right hand, and mild weakness of her right hand and wrist. The right biceps, supinator and triceps reflexes were all absent. On sensory examination, there was impairment of pinprick and temperature sensation throughout her right arm.

What is the most likely diagnosis?

Answers

A: cervical spondylosis
B: malignant infiltration of the right brachial plexus
C: multiple sclerosis
D: subacute combined degeneration of the spinal cord
E: syringomyelia

Correct answer: E

Explanation

The combination of lower motor neuron (LMN) signs and spinothalamic loss is suggestive of this (rare) diagnosis, syringomyelia. Spondylosis is a radiological diagnosis, the story is too long for malignancy, and multiple sclerosis (MS) would usually lead to upper motor neuron (UMN) not LMN signs (although LMN signs can rarely occur in MS). Subacute combined degeneration of the spinal cord typically affects the posterior columns.

Question 187

A 65-year-old man with atrial fibrillation, which was suboptimally controlled by atenolol, was treated with the addition of oral digoxin 250 micrograms daily. His physician explained that the full effect of this treatment would not be apparent for at least a week.

On which pharmacokinetic variable did the physician base this explanation?

- A: bioavailability ○
- B: half-life ○
- C: plasma protein binding ○
- D: rate of hepatic metabolism ○
- E: renal clearance ○

Question 187 ⌄

Next Question

Question 187

No Answer Given

Incorrect

A 65-year-old man with atrial fibrillation, which was suboptimally controlled by atenolol, was treated with the addition of oral digoxin 250 micrograms daily. His physician explained that the full effect of this treatment would not be apparent for at least a week.

On which pharmacokinetic variable did the physician base this explanation?

Answers

A: bioavailability
B: half-life
C: plasma protein binding
D: rate of hepatic metabolism
E: renal clearance

Correct answer: B

Explanation

Digoxin has an average half-life of 36 hours. Steady state digoxin concentration after daily oral dosing is achieved after 5 half-lives i.e. around 1 week.

Question 188

A 45-year-old man with trisomy 21 underwent chromosome analysis to provide information about the possibility of recurrence in his family.

Chromosome analysis confirmed that his karyotype was 47,XY,+21.

What term best describes this karyotype?

A: aneuploid ○

B: diploid ○

C: haploid ○

D: monoploid ○

E: triploid ○

Question 188 ⌄

Next Question

Question 188

No Answer Given

Incorrect

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Chromosome analysis confirmed that his karyotype was 47,XY,+21.

What term best describes this karyotype?

Answers

A: aneuploid
B: diploid
C: haploid
D: monoploid
E: triploid

Correct answer: A

Explanation

This karyotype describes a male with 23 pairs of chromosomes plus an additional chromosome 21. Aneuploidy is the term used to describe the presence of an abnormal number of chromosomes (either less than 46 or more) but not abnormal numbers of complete chromosome sets. The other options refer to abnormal number of complete sets of chromosomes – fewer or more than 2.

Question 189

A 60-year-old man was admitted with seizures and altered mental status. He was treated with intravenous aciclovir for suspected viral encephalitis. The product literature advised maintaining adequate hydration to avoid renal injury.

What is the mechanism of renal injury with aciclovir?

- A: acute tubular necrosis ○
- B: crystalluria ○
- C: glomerulonephropathy ○
- D: interstitial nephritis ○
- E: renal ischaemia ○

Question 189 ⌄

Next Question

Question 189

No Answer Given

Incorrect

A 60-year-old man was admitted with seizures and altered mental status. He was treated with intravenous aciclovir for suspected viral encephalitis. The product literature advised maintaining adequate hydration to avoid renal injury.

What is the mechanism of renal injury with aciclovir?

Answers

A: acute tubular necrosis
B: crystalluria
C: glomerulonephropathy
D: interstitial nephritis
E: renal ischaemia

Correct answer: B

Explanation

Aciclovir is renally eliminated. In the presence of dehydration, aciclovir can precipitate as crystals in the kidney tubules causing acute kidney injury.

Question 190

A 70-year-old woman presented following the sudden onset of painless diplopia.

On examination, movements of her left eye were limited in all directions. There was a mild left-sided ptosis. Her left pupil was larger than her right and reacted poorly to light (direct and consensual). There was loss of pinprick sensation on her right forehead.

What is the most likely site of the lesion?

- A: left cavernous sinus ○
- B: left cerebellopontine angle ○
- C: left medulla ○
- D: left midbrain ○
- E: left pons ○

Question 190

No Answer Given

Incorrect

A 70-year-old woman presented following the sudden onset of painless diplopia.

On examination, movements of her left eye were limited in all directions. There was a mild left-sided ptosis. Her left pupil was larger than her right and reacted poorly to light (direct and consensual). There was loss of pinprick sensation on her right forehead.

What is the most likely site of the lesion?

Answers

A: left cavernous sinus
B: left cerebellopontine angle
C: left medulla
D: left midbrain
E: left pons

Correct answer: A

Explanation

The examination suggests a lesion involving III, IV, V(1), and VI, and the only location for such a lesion would be cavernous sinus; the other distractors could not explain such a lesion.

Question 191

A 23-year-old woman was referred for further investigation of primary infertility. Her menarche had occurred at the age of 13 and her menstrual cycle varied in length from 24 to 76 days.

On examination, her BMI was 33.0 kg/m2 (18.0–25.0). She had mild facial hirsutism.

Investigations:

serum 17-hydroxyprogesterone	8 nmol/L (1–10)
serum oestradiol	225 pmol/L (200–400)
serum follicle-stimulating hormone	4.2 U/L (2.5–10.0)
serum luteinising hormone	8.8 U/L (2.5–10.0)
serum prolactin	525 mU/L (100–600)
serum thyroid-stimulating hormone	4.8 mU/L (0.4–5.0)

What is the most likely diagnosis?

A: endometriosis ○

B: non-classical congenital adrenal hyperplasia ○

C: polycystic ovary syndrome ○

D: prolactinoma ○

E: subclinical hypothyroidism ○

Question 191

No Answer Given

Incorrect

A 23-year-old woman was referred for further investigation of primary infertility. Her menarche had occurred at the age of 13 and her menstrual cycle varied in length from 24 to 76 days.

On examination, her BMI was 33.0 kg/m2 (18.0–25.0). She had mild facial hirsutism.

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What is the most likely diagnosis?

Answers

A: endometriosis
B: non-classical congenital adrenal hyperplasia
C: polycystic ovary syndrome
D: prolactinoma
E: subclinical hypothyroidism

Correct answer: C

Explanation

The clinical scenario of irregular menstruation, infertility and hirsutism, indicative of androgen excess in a young woman, is due to polycystic ovary syndrome.

Question 192

A 17-year-old girl of Asian–Indian descent presented with a typical rash of erythema nodosum over her shins. She felt otherwise well. She had been born in the UK and had no previous medical problems.

A chest X-ray showed a very abnormal mediastinal silhouette.

Investigations:

serum lactate dehydrogenase	370 U/L (10–250)
serum angiotensin-converting enzyme	78 U/L (25–82)
serum α-fetoprotein	1 kU/L (<10)
serum β-human chorionic gonadotropin	<1 U/L (<5)

CT scan of thorax	12-cm-diameter, complex soft-tissue lesion in anterior mediastinum, encasing great vessels in superior mediastinum; enlarged left para-cardiac and hilar lymph nodes up to 11 mm in diameter; no further abnormality in thorax or upper abdomen

What is the most likely diagnosis?

A: Hodgkin disease ○

B: sarcoidosis ○

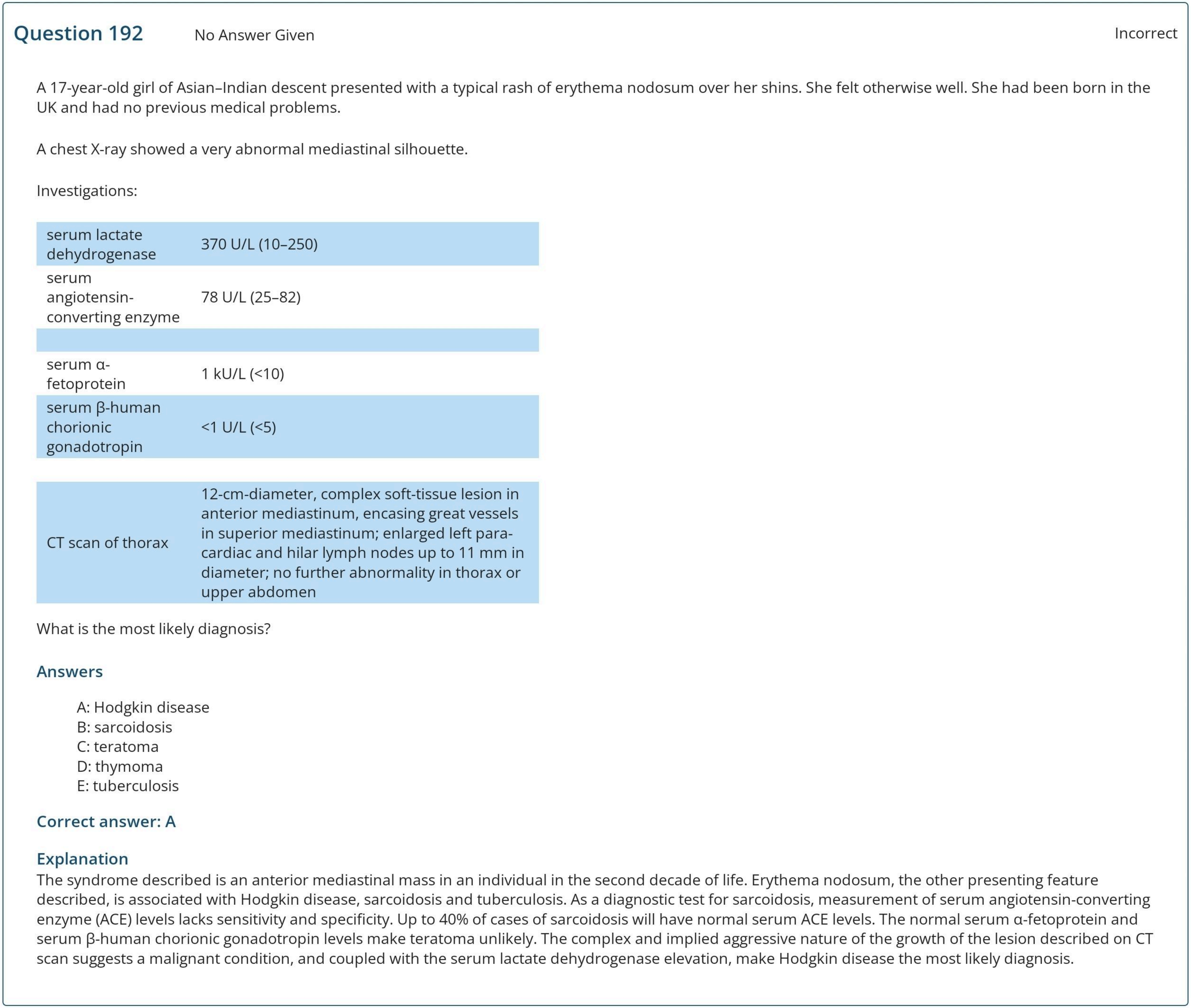
C: teratoma ○

D: thymoma ○

E: tuberculosis ○

Question 192

Next Question



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What is the most likely diagnosis?

Answers

A: Hodgkin disease
B: sarcoidosis
C: teratoma
D: thymoma
E: tuberculosis

Correct answer: A

Explanation

The syndrome described is an anterior mediastinal mass in an individual in the second decade of life. Erythema nodosum, the other presenting feature described, is associated with Hodgkin disease, sarcoidosis and tuberculosis. As a diagnostic test for sarcoidosis, measurement of serum angiotensin-converting enzyme (ACE) levels lacks sensitivity and specificity. Up to 40% of cases of sarcoidosis will have normal serum ACE levels. The normal serum α-fetoprotein and serum β-human chorionic gonadotropin levels make teratoma unlikely. The complex and implied aggressive nature of the growth of the lesion described on CT scan suggests a malignant condition, and coupled with the serum lactate dehydrogenase elevation, make Hodgkin disease the most likely diagnosis.

Question 193

A 16-year-old boy presented with a 9-month history of a right-sided neck swelling, which had steadily increased in size over the previous 3 months but had remained painless. He had no other symptoms.

On examination, he had enlarged pre-auricular and jugulodigastric lymph nodes and there was no other abnormality.

Investigations:

chest X-ray	normal

What next investigation would be most useful in making a diagnosis?

- A: bone marrow examination ○
- B: CT scan of head and neck ○
- C: excision biopsy of cervical lymph node ○
- D: fine-needle aspiration of cervical lymph node ○
- E: Mantoux skin test ○

Question 193

No Answer Given

Incorrect

A 16-year-old boy presented with a 9-month history of a right-sided neck swelling, which had steadily increased in size over the previous 3 months but had remained painless. He had no other symptoms.

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Investigations:

chest X-ray	normal

What next investigation would be most useful in making a diagnosis?

Answers

A: bone marrow examination
B: CT scan of head and neck
C: excision biopsy of cervical lymph node
D: fine-needle aspiration of cervical lymph node
E: Mantoux skin test

Correct answer: C

Explanation

This is longstanding painless and progressive neck adenopathy in an adolescent. The most likely diagnosis is classical Hodgkin lymphoma. The most appropriate diagnostic investigation is excision biopsy. Fine-needle aspiration is likely to yield insufficient material for diagnostic purposes in Hodgkin lymphoma and, therefore, is likely to be unhelpful and delay diagnosis. Bone marrow examination) and CT scan of head and neck are investigations reserved for staging rather than diagnosis. Mantoux skin test is not likely to be helpful in this setting as Hodgkin lymphoma is the most likely diagnosis.

Question 194

An 80-year-old man underwent carotid endarterectomy after an ischaemic stroke.

Investigations:

carotid plaque histology	presence of foam cells within the intima

In atherosclerosis, what is the origin of foam cells?

A: B lymphocytes ○

B: basophils ○

C: endothelial cells ○

D: monocytes ○

E: neutrophils ○

Question 194
Next Question

Question 194

No Answer Given

Incorrect

An 80-year-old man underwent carotid endarterectomy after an ischaemic stroke.

Investigations:

carotid plaque histology	presence of foam cells within the intima

In atherosclerosis, what is the origin of foam cells?

Answers

A: B lymphocytes
B: basophils
C: endothelial cells
D: monocytes
E: neutrophils

Correct answer: D

Explanation

Foam cells are the fat-laden M2 macrophages that serve as the hallmark of early-stage atherosclerotic lesion formation. Foam cell formation is triggered by a number of factors including the uncontrolled uptake of modified low-density lipoprotein (LDL), the upregulation of cholesterol esterification and the impairment of mechanisms associated with cholesterol release. They are formed when circulating monocyte-derived cells are recruited to the atherosclerotic lesion site or fat deposits in the blood vessel walls.

Question 195

A 24-year-old woman presented with recurrent joint pains. A range of investigations, including a test for autoimmune serology, was performed. Antinuclear antibodies were detected, but the isotype was not indicated.

What antinuclear antibody isotype is most likely to indicate a diagnosis of systemic lupus erythematosus?

- A: IgA ○
- B: IgD ○
- C: IgE ○
- D: IgG ○
- E: IgM ○

Question 195 ⌄

Next Question

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What antinuclear antibody isotype is most likely to indicate a diagnosis of systemic lupus erythematosus?

Answers

A: IgA
B: IgD
C: IgE
D: IgG
E: IgM

Correct answer: D

Explanation

IgG antinuclear antibodies are associated with systemic lupus erythematosus.

Question 196

A 20-year-old woman presented with fever, headache and a non-blanching rash of 12 hours' duration.

She was found to have meningococcal meningitis and septicaemia, and started treatment with appropriate therapy.

The consultant in Public Health Medicine was notified and advised prophylactic antibiotics for her close contacts. She shared a house with three friends, who were all well.

What is the most appropriate prophylaxis for her housemates?

A: cefuroxime ○

B: chloramphenicol ○

C: ciprofloxacin ○

D: doxycycline ○

E: phenoxymethylpenicillin ○

Question 196

No Answer Given

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What is the most appropriate prophylaxis for her housemates?

Answers

A: cefuroxime
B: chloramphenicol
C: ciprofloxacin
D: doxycycline
E: phenoxymethylpenicillin

Correct answer: C

Explanation

This is in keeping with guidance from the UK Health Security Agency.

Question 197

A 28-year-old man presented with a 1-month history of fever, joint pains and a non-itchy rash that tended to occur in the mornings.

On examination, his temperature was 39.0°C. He had swollen and warm ankles and wrists, a maculopapular rash on his trunk and legs, and splenomegaly.

Investigations:

haemoglobin	110 g/L (130–180)
white cell count	21.0×10^9/L (4.0–11.0)
neutrophil count	19.5×10^9/L (1.5–7.0)
ESR	78 mm/1st h (<15)
serum ferritin	4500 µg/L (15–300)

chest X-ray	normal

What is the most likely diagnosis?

- A: adult-onset Still’s disease ○
- B: haemochromatosis ○
- C: Lyme disease ○
- D: lymphoma ○
- E: sarcoidosis ○

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ESR	78 mm/1st h (<15)
serum ferritin	4500 µg/L (15–300)

chest X-ray	normal

What is the most likely diagnosis?

Answers

A: adult-onset Still’s disease
B: haemochromatosis
C: Lyme disease
D: lymphoma
E: sarcoidosis

Correct answer: A

Explanation

The correct answer is adult-onset Still’s disease. Still’s disease is a rare disease, more often seen in children than adults. It is a systemic inflammatory illness. Clinical features include fever, joint pain/inflammation and evanescent macular rash. A characteristic lab feature is very high levels of ferritin; additional lab features include anaemia, leukocytosis and high acute-phase reactants. This scenario showcases all these features in an adult patient. Haemochromatosis would not cause systemic inflammatory illness but can lead to arthralgia, low-grade localised joint inflammation and chondrocalcinosis. Lyme disease is a bacterial infection caused by Borrelia burgdorferi spread by tick bite; the characteristic rash is erythema migrans. Lymphoma is less likely since the chest X-ray is normal and the serum ferritin is very high. Rashes associated with lymphoma tend to be itchy. Sarcoidosis commonly presents as erythema nodosum, arthralgia, periarthritis (mainly at the ankles) and bilateral hilar lymphadenopathy.